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CLINICAL LECTURES

ON

PULMONARY CONSUMPTION.

BY

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PREFACE.

THE lectures contained in the following pages were first published in the "Berliner Klinische Wochenschrift" of 1866 and 1867, by *Dr. Ed. Ott*, Professor *Niemeyer's* assistant. They were soon afterwards reprinted in a collected form, and have since, in two editions, found a very wide circulation on the Continent. In presenting them now to the Members of the "New Sydenham Society," it need hardly be stated that, since their first appearance, the "thorough reform of the doctrine of pulmonary consumption" which Professor *Niemeyer* then called for has been inaugurated. The last few years have been distinguished by great activity in this very field of pathology, and most important discoveries have been made.

The views insisted upon by Professor *Niemeyer* have, almost to their whole extent, been confirmed by the results of recent investigation. But the renewed study of the whole question has led also to a more just appreciation of the works of former observers. In this country the labours of *Thomas Addison*, which had almost been forgotten, and which had remained entirely unknown on the Continent, have been brought to light again, and show that already at a period when *Laënnec's* teaching had just commenced to dominate over the pathology of lung diseases, an independent observer arrived at, and firmly held, the opinion which in more recent times was established by *Reinhardt*, *Virchow*, and his disciples, and which forms the keynote of these lectures, namely that, to use *Addison's* own words, "*inflammation constitutes the great instrument of destruction in every form of phthisis.*"

The other chief point of Professor *Niemeyer's* teaching,

namely the theory first brought forward by *Buhl* in 1857, concerning the relationship of miliary tubercle to cheesy products, which he adopts with some modifications, has, since the appearance of these lectures, not only been most ably supported by the clinical and pathological observations of *C. E. E. Hoffmann*, but has been strikingly confirmed by the results of the experimental researches which were started by *Villemin*, and which have been worked out by *Simon*, *A. Clark*, *Burdon Sanderson*, and *Wilson Fox* in this country, by *Colin*, *Chauveau*, and others in France, and by *Lebert*, *Waldenburg*, *Cohnheim*, and others in Germany. It is now an established fact that miliary tubercles can be artificially produced in animals by the inoculation of cheesy, tubercular, or purulent matter, or by simply establishing a deposit of pus in some part of the body.

By the results of these experiments, *Buhl's* theory has both been narrowed and enlarged: the *local* nature of the infection, upon which *Niemeyer* has already laid great stress in these lectures, has been placed more in the foreground, and, tubercular infection having been divested of its specific nature, tubercle may be said in some sense to have lost some of its special malignancy, while, on the other hand, the sharp distinction made by *Niemeyer* between the inflammatory processes and tubercles has been considerably qualified by the fact that both may result from infection. But, however the clinical aspects of consumption may ultimately be affected by the further development of these studies, the picture here drawn, by Professor *Niemeyer*, of pulmonary phthisis, and more especially the principles derived therefrom for its treatment, will lose none of their force for a long time to come. These lectures have, therefore, although a few years have already elapsed since their first appearance, lost nothing of their importance, and may form for the Members of the Society a suitable accompaniment to *Addison's* papers on the same subject in one of the previous volumes.

On the part of the Translator, a few notes have been added

in explanation of terms exclusively or differently used in German medical nomenclature.

Some alteration from, and addition to, the original has, with Professor *Niemeyer's* concurrence, been made at page 39, by inserting some sentences from a more recent paper by the Author.

In conclusion, I have to express my best thanks to my friend and colleague, Dr. A. B. Shepherd, for having kindly revised the manuscript before going to press, and for much assistance in correcting the proof-sheets.

C. B.

FINSBURY PLACE NORTH,
May, 1870.

CLINICAL LECTURES ON PULMONARY CONSUMPTION.

THERE is no subject in the whole range of pathology which more urgently requires a thorough reform than that of Pulmonary Consumption. In this field, pathological anatomy is much in advance of clinical medicine. The term "pulmonary tuberculosis" being still the one most commonly used for pulmonary consumption, shows that the majority of the physicians and clinical teachers of the day abide by *Laënnec's* doctrine, and recognise but *one* form of pulmonary phthisis, namely, tubercular phthisis. The dangerous tenets of *Laënnec's* doctrine, "that pulmonary phthisis is a constitutional disease, that it never can develop itself out of acute or chronic pneumonia, or take its rise from a bronchial haemorrhage, or from a neglected or protracted cold," are up to this day taught in the medical schools as undisputed truths, and have in practice a most pernicious effect on the prevention and treatment of phthisis.

Laënnec's dogma, that every form of pulmonary phthisis is caused by a specific new growth (*une espèce particulière de production accidentelle*), and that the cavities in the lung take their origin alone in the softening and the evacuation of this growth, was simply a *pathological hypothesis*, which, by the more recent researches in the field of pathological anatomy, has been entirely refuted. This being the case, the conclusions drawn from it by *Laënnec* have lost all support, and the assertions which are still so frequently repeated, that a bronchitis out of which phthisis is developed is not to be considered as a primary genuine cold,

but as a secondary catarrh caused by the irritation of the lung by already existing tubercles, and that the same explanation must hold good for those attacks of pneumonia and haemoptysis which so frequently precede phthisis, prove that in this field medical practice has almost entirely ignored the progress made by pathological anatomy.

The error in which *Laënnec* and his followers were entangled did not consist in their regarding tubercle as a new growth, but in the fact that they considered those condensations of lung-tissue, which have quite a different origin, to be also products of a development of tubercles. This confusion originated chiefly in the *cheesy metamorphosis* of the originally gray and transparent tubercle being accepted as one of its specific peculiarities, and as a sign from which the tubercular nature of any substance which underwent this transformation might be inferred. From this point of view, one was justified in regarding the extensive consolidations in phthisical lungs which were found side by side with miliary tubercles, and which, having been at first gray and transparent, had afterwards become yellow and cheesy, as a diffuse growth of tubercles, or as extensive infiltrations of the lung with tubercular material. But, since pathologists, especially *Virchow*, have shown that substances of the most varied kind which have not the least relationship to tubercle, such as older cancerous tumours, lymphatic glands swollen by hyperplasia of their cells, haemorrhagic deposits, encapsulated masses of pus, etc., undergo the very same cheesy transformation as miliary tubercle, the fact that those diffuse consolidations of the lung become yellow and cheesy can no longer be admitted as a proof of their tubercular nature. *Laënnec's* whole theory of infiltrated tuberculosis, or tubercular infiltration, which was supported by that criterion alone, has thus lost its foundation. In the present stage of science there is but one kind of tubercle—miliary tubercle, and but one form of tuberculosis—miliary tuberculosis: and all those changes which, since *Laënnec*, have been designated "*infiltrated pulmonary tubercle*," are the product of chronic, especially of catarrhal, pneumonia. It is to be hoped that the terms "to undergo the tubercular change," "infiltrated tubercle," "tubercular infiltration," which have caused so much confusion, and which I have zealously opposed for years, will at last be given up.

But the doctrine of *miliary tubercle* has no less than that of infiltrated tubercle received a blow by the progress of pathological anatomy. It has been found that many formations which, at first sight, appear to be miliary tubercles, and which formerly were commonly considered as tubercles, are, on more careful examination, found to be transverse sections of bronchi with cheesy contents, or whose walls are thickened and surrounded by alveoli filled with a cheesy infiltration. If such mistakes be avoided in judging of the post-mortem appearances, we arrive at a result which, it is true, is in glaring opposition to the views prevailing in practice, namely, *that in very many cases there is not a single tubercle found in phthisical lungs*, and that the consolidations and destructions of the lung are caused alone by inflammation leading to induration and softening.

Virchow, whose merits in this field of pathological research are very great, goes, however, certainly too far in asserting that even the doctrine of miliary tuberculosis is almost entirely founded on errors, and that almost all the alleged miliary tubercles of the lungs are bronchitic, peribronchitic, and pneumonic deposits. It is by no means of rare occurrence for the same transparent gray granules—which in acute miliary tuberculosis are scattered in great number through the lungs and most organs, and whose tubercular nature can hardly be questioned—to be met with also in phthisical lungs. But no less should we consider as tubercles those yellow cheesy deposits which occur unmistakably in the form of miliary granules, when by their side there are also present in the lung those gray miliary tubercles, and if also in other organs gray and cheesy tubercles are found. The proof that those cheesy granules are not tubercles, but the product of vesicular pneumonia, cannot be established, as we have no criterion by which to distinguish a cheesy tubercle from a cheesy miliary granule of inflammatory origin. I repeat that, even leaving out of the question the tuberculosis of the bronchial mucous membrane, I cannot admit that in the lungs of phthisical patients tubercles do but *rarely* occur.

But still, the relation of the tubercles to the consolidations and destructions of the lung, *i. e.* to phthisis, even in such cases in which they occur side by side, is, as a rule, quite a different one from that which the faculty teaches us to regard as their normal or usual relation. If at every autopsy of this kind we put

to ourselves the question at what period of the disease the development of the tubercles may have taken place, an investigation which is not influenced by inveterate prejudices leads to the conclusion *that the tubercles in the majority of cases are clearly of recent origin, and have complicated the pulmonary phthisis when it was already in an advanced stage.* With regard to intestinal and laryngeal tubercle it has always been an accepted fact that, as a rule, it arises only as a secondary complication of an already existing pulmonary phthisis. I am convinced that the same interpretation holds good also for the majority of cases of pulmonary tubercle; and I have repeatedly had the satisfaction of receiving from former pupils reports of patients "who, after having suffered from phthisis for years, had at last become affected with tubercles." In cases of this kind, the tubercles either take no part at all, or only a very secondary one, in the destruction of the lung. As a rule, death occurs before any considerable softening and expectoration of single or aggregated tubercles has taken place. In spite of the presence of tubercles in the lungs, this form of pulmonary phthisis cannot therefore be strictly called tubercular phthisis.

In only a comparatively small number of those cases in which, besides the products of chronic pneumonia, tubercles are found in the lungs, an unprejudiced examination of the post-mortem appearances leads to a conclusion which agrees with the prevailing views on the relation of pulmonary tuberculosis to pulmonary phthisis, namely, *that the development of the tubercles has preceded the pneumonic processes*, and that the cavities which are found, originate partly in the softening and disintegration of compound tubercles, and have gradually become larger by the softening of fresh tubercles subsequently developed in their walls. In this form of pulmonary phthisis, which alone ought to be designated as tubercular phthisis, the development of the tubercles seems, as first described by *Virchow*, to start, as a rule, in the mucous membrane of the bronchi. In such cases, we frequently find in the trachea and the larger bronchi, granular patches consisting of innumerable miliary tubercles, or ulcers with the characters of the primary and secondary tubercular ulcer, as described by *Rokitansky*. Moreover, small whitish and yellow tubercles are found in the smaller bronchi, alongside of the signs of a purulent catarrh; and sections which happen to be made in the right

direction show that the growth of tubercles has spread from the bronchus to its lateral and terminal alveoli.* According to the direction of the cut, the compound tubercles formed in this way appear as roundish or conical agglomerations of miliary granules, an appearance which is rarely or never seen in acute miliary tuberculosis in which the development of the tubercles does not start from the bronchial mucous membrane. The pneumonic processes which complicate tuberculosis in what we call *tubercular phthisis* are, as a rule, much less extensive than in that form of pulmonary consumption which consists alone in chronic pneumonia, and in that form in which a secondary tuberculosis has complicated the disintegrating and destructive processes only at a period when they were already in an advanced stage. We shall later advert to the circumstance that the greater the contrast between the high pyrexia, the rapid emaciation and the violent dyspnoea with the small amount of condensation of lung-tissue found on physical examination, the greater is also the danger, the more urgent the suspicion of *tubercular* phthisis. When the pyrexia, the wasting, the dyspnoea are in a direct ratio to the extension of the consolidated part of the lung, the prognosis is better, because a hope may be entertained that the patient, although affected with phthisis, is not suffering from *tubercular* phthisis.

Having given it as our opinion that many cases of pulmonary phthisis are, during their whole course, caused by inflammatory processes, and that, in the majority of those cases in which tubercles are present in the lungs by the side of pneumonic products, the tubercles have only developed themselves at a later stage of the disease, we now proceed to consider a little more closely the pneumonic processes which lead to pulmonary consumption.

And, first of all, we must here decidedly oppose the assertion, that a peculiar form of pneumonia, which was from the beginning of a special kind, and must therefore be separated from the other forms of pneumonia, is the foundation of the cheesy infiltrations of the lung, and of their breaking down into cavities. This creation of a "tubercular or cheesy pneumonia" is quite a mistake, and threatens us with fresh confusion. On the contrary,

* See Luschka, die Anatomie des Menschen, Vol. I. part ii. p. 309.

it can be confidently asserted, *that every form of pneumonia may, under certain conditions, terminate in cheesy infiltration, and there is no form of pneumonia of which cheesy degeneration is the constant and only result.* It is true the several forms of pneumonia present a great variety with regard to the frequency with which the product of inflammation, instead of being liquefied and re-absorbed, becomes more dense and is transformed into a cheesy substance. In common acute pneumonia this termination is rare, in acute catarrhal pneumonia it is rather frequently met with, and in chronic catarrhal pneumonia it forms almost the rule.

If we say that common acute pneumonia may also lead to cheesy infiltration of the lung, we must not be suspected to have made a mistake in the diagnosis of the disease. The sudden and violent invasion of the illness, as well as the symptoms and the course of the first stages, especially the character of the pyrexia and the extension of the consolidation, agree, in some cases in which an acute lobar pneumonia leaves cheesy infiltration behind, so completely with the well-known and strongly marked features of common acute pneumonia that their identity cannot be doubted. Moreover, we sometimes have an opportunity of observing, post-mortem, gradual changes, from the red and gray hepatisation, with well-marked granulation of the surface of a section, to cheesy infiltration. The conditions under which the product of a common pneumonia undergoes cheesy degeneration are not known to us; but we must particularly mention the fact that this termination is not only observed in those persons who have tubercles, old cheesy deposits, or cavities in their lungs, but at least as frequently in previously healthy individuals, and especially in those affected with long-standing emphysema of the lungs.

The termination of an *acute catarrhal pneumonia* in cheesy infiltration of the lung-tissue has already been carefully described in a report, by *Dr. Meschede*,* of *Virchow's Pathological Demonstrations* in 1856. More recently *Bartels*† and *Ziemssen*‡ have in two excellent papers given a clear and complete account of catarrhal pneumonia in all its stages, and have with particular

* Wiener Medicinische Wochenschrift. 6 Jahrg. 1856. Nos. 24, 25.

† Virchow's Archiv, Vol. XXI. parts i. and ii.

‡ Pleuritis und Pneumonie im Kindesalter. Berlin, 1862, p. 293 seq.

care described its termination in cheesy infiltration. Acute catarrhal pneumonia originates in a catarrh of the smallest bronchi extending to the alveoli. In this form of pneumonia the lung-tissue becomes consolidated, not by an exudation rich in fibrin, but by the alveoli being filled with young, indifferent round cells. Under the most favourable conditions, this inflammatory product, abounding in cells, undergoes the same changes which the fibrin and the cells imbedded in it nearly always undergo in common acute pneumonia. The cells become filled with fat-globules and disintegrate, and the contents of the alveoli, having thus become fluid, are reabsorbed, so that air can enter again into the air vesicles. In less favourable cases, the cellular elements accumulate more and more in the alveoli, the fatty metamorphosis which commences in them remains incomplete, the cells lose their round form and, by losing water, shrink into irregularly-shaped corpuscles. To these microscopical changes corresponds the transformation, as presenting itself to the naked eye, of the dull gray, or reddish gray homogeneous consolidation of the lung-tissue, into a dull, yellow cheesy substance. Acute catarrhal pneumonia, which in the beginning is, as a rule, a lobular process, but which may gradually spread over numerous lobuli, and even consolidate an entire lobe, occurs with particular frequency in the course of measles and whooping-cough; and the numerous deaths which take place in the wake of these diseases, and which until quite recently have been frequently referred to tuberculosis, have their cause for the most part in the *fatal termination of a catarrhal pneumonia arising in the course of the above-named diseases*. But it is also by no means rare that in the course of a primary, genuine bronchial catarrh, the disease extends from the bronchi to the alveoli, and causes a more or less extensive consolidation of the lung-tissue. This form, too, of catarrhal pneumonia may terminate in cheesy metamorphosis, and in a rapid disintegration of the lung-tissue, producing the symptoms of a florid phthisis or galloping consumption, and leading in a short time to a fatal result. Such cases are generally spoken of as instances of "an infiltrated tuberculosis having occurred in the form, or under the mask, of a febrile bronchial catarrh or influenza." This false and confused view of such cases is, at all events, convenient, and shelters the physician against the reproach of having neglected the catarrh until dulness at the apex revealed

the seriousness of the case, and, by not taking measures in time, of having allowed it to extend to the lung-tissue. Nor is the termination of acute catarrhal pneumonia in cheesy infiltration exclusively confined to those persons who have already tubercles, cheesy deposits, or cavities in their lungs, but it occurs also in persons whose lungs have previously been quite healthy. There are cases where the conditions under which cheesy degeneration of the product of a catarrhal pneumonia takes place are just as obscure as when an ordinary acute pneumonia takes that termination. "*Homines quadrati*" are by no means secure against succumbing to an acute catarrhal pneumonia which, originating in a cold, terminates in cheesy infiltration and the destruction of the lung-tissue. In the same manner the strongest and best nourished children may, in the course of measles or whooping-cough, acquire an acute catarrhal pneumonia, which, by its products undergoing cheesy metamorphosis, rapidly carries them off. But much more frequently than in persons with a strong constitution, and who until then enjoyed sound health, is this termination of acute catarrhal pneumonia met with in weakly and delicate individuals, who possess but feeble powers of resistance against injurious influences, and who, in consequence thereof, easily fall ill and, when ill, but slowly recover. We shall, when speaking of the etiology of phthisis, more fully treat of the causes and symptoms of this vulnerability, which, in popular language, is not inappropriately termed "delicate constitution"; but we will here anticipate that persons with such a delicate and vulnerable constitution, when seized with inflammatory changes of nutrition, as a rule present a striking tendency in the inflammatory products to abound in cells—a peculiarity with which the tendency to a cheesy metamorphosis of the inflammatory products is most intimately connected. We have said that acute catarrhal pneumonia may lead to cheesy infiltration even in persons whose lungs have previously been healthy: we must add, that individuals who have already suffered from catarrhal pneumonia, and in whose lungs former attacks have left behind indurations, cheesy deposits, or cavities, are in still greater danger of fresh attacks of acute catarrhal pneumonia taking the same course. When we come to give an outline of the various forms under which phthisis generally occurs, we shall also have to mention cases in which the patients are again and

again seized by acute catarrhal pneumonia, and in which every fresh attack of this disease leads to an acute extension of the indurations and destructions of the lung, until the patients at last succumb to a final attack, or die of secondary tuberculosis.

Chronic catarrhal pneumonia is one of the very commonest diseases. It is indeed of this disease that the assertion, so often and so wrongly made, as to the great frequency of "tuberculosis," holds good. I consider the term chronic catarrhal pneumonia suitable to designate those indurations of the lung alone, which have been chiefly described under the name of infiltrated tuberculosis and of gelatinous or tubercular infiltration, and which of late have, no less inappropriately, by some been called tubercular or cheesy pneumonia. These lobular and, when the process is more extensive, not rarely lobar, infiltrations of the lung, in colour and appearance not unlike frogs' spawn, presenting on section a homogeneous and smooth surface, not only consist in the filling up of the alveoli with young, indifferent round cells, *i. e.* in anatomical changes which are characteristic of catarrhal pneumonia, but they originate also, with rare exceptions, in the extension to the finest ramifications of the bronchi, and from them to the alveoli themselves, of a chronic bronchial catarrh, furnishing a secretion rich in cells. I should certainly not attach any great importance to the designation of this gelatinous pneumonia, as a chronic catarrhal pneumonia, did I not believe that, by calling a thing by its right name, not only the insight into the etiology and symptomatology of pulmonary phthisis, but also its prophylaxis and treatment, will be advanced. It is not difficult to see why chronic catarrhal pneumonia should, in the great majority of cases, and much more frequently than the acute form of catarrhal pneumonia, and than ordinary acute pneumonia, lead to cheesy infiltration of the lung-tissue. The slow and lingering progress of the disease, which has an ever increasing accumulation of cells in the alveoli as its consequence, perhaps also the aspiration of cellular elements from the smallest bronchi, by which the quantity of cells formed in the alveoli themselves is still further increased, cause, in a purely mechanical manner, the cells thus densely packed together to encroach upon each other, to shrink, and to undergo necrobiosis (*Virchow*). There are, however, some few exceptions from the rule that chronic catarrhal pneumonia terminates in cheesy infiltration.

If the process ceases before the accumulation, and the pressure on each other, of the cells contained in the alveoli has reached a high degree, they may undergo a complete fatty metamorphosis, and may become liquefied and reabsorbed, so that the air can again enter the alveoli. The fact cannot be denied, that in certain cases more or less extensive consolidations of the lungs of phthisical patients disappear altogether; but this is by no means surprising to any one who has emancipated himself from the prejudices of *Laënnec's* doctrine.—Chronic catarrhal pneumonia occurs in previously healthy lungs, as well as in those which already contain tubercles, indurations, old cheesy deposits, or cavities. In the former case it mostly forms the first link of the nutritive changes in which pulmonary phthisis consists; in the other, it contributes essentially to the further extension of the consolidations and destructions in the lungs. Individuals with a strong constitution and sound health possess by no means an immunity against chronic catarrhal pneumonia, but it is in delicate, vulnerable persons, more frequently than in them, that a chronic bronchial catarrh extends into the alveoli.

Cheesy infiltration of the lung-tissue, be it caused by the one or by the other form of pneumonia, does not, however, by any means in all, or even in the majority of cases, lead to *immediate disintegration of the cheesy infiltrations and to the formation of cavities*. On the contrary, these events take place only under certain circumstances, or, perhaps, only in cases of particular intensity of the disease. They are evidently brought about, not only by the encroachment upon one another of the cells accumulated in the alveoli, but by their exerting also a pressure on the surrounding tissue and its blood-vessels, which causes the walls of the alveoli, thereby deprived of their nutritive fluid, to degenerate and to die. Perhaps the anaemia and the necrosis of the lung-tissue are also favoured by the cell development in severe cases not only taking place on the surface, but in the tissue itself. Further on we shall more fully describe the symptoms and the progress of the disease, as it presents itself in those cases in which cheesy infiltration leads to an immediate breaking down of the deposit and to the formation of cavities; and it will then be shown that the form of disease resulting therefrom corresponds to that of a “phthisis florida” or galloping consumption.

If the cell growth is not so abundant as to lead to a consider-

able compression of the walls of the alveoli and of their nutritive blood-vessels, the cheesy masses may gradually become still more inspissated, and the shrunken, atrophied cells may break up into a detritus. The organic substances contained therein disappear more and more, and calcareous salts are deposited, until at last a cretaceous or mortar-like concretion remains. In other cases, on the contrary, the shrunken cells are, in the course of time—their incomplete fatty metamorphosis becoming at last complete—liquefied and made fit for reabsorption. Whilst one or the other of these further changes occurs in the cellular elements contained in the cheesy infiltrations, an *abundant formation of connective tissue* takes place in the lung. The cretaceous deposits are encapsulated, and those places from which the cells gradually disappear by liquefaction, through fatty metamorphosis and reabsorption, are filled up by connective tissue. The lung-tissue does not again, in such cases, become permeable for air, but is transformed into a tough, indurated substance. The connective tissue, by its gradual shrinking, occupying much less space than the sound lung-tissue which it replaces, the lung becomes smaller, the thorax contracted, and, as this contraction has but narrow limits, the bronchi are dilated into oblong and round cavities. This is the most frequent mode of formation of cavities in chronic phthisis. The reabsorption of the cheesy masses, which have subsequently undergone fatty metamorphosis, and have thus become liquefied, may be so complete, that at the autopsy the lung is found quite impermeable for air, riddled by (bronchiectatic) cavities, but without any remnants of cheesy masses.

The above description might lead to the conclusion that I do not consider chronic pneumonia and, as pulmonary phthisis is principally caused by chronic pneumonia, phthisis itself to be a particularly dangerous disease; and, indeed, I do not hesitate to assert that the chronic inflammatory processes which lead to consolidation of the lung and to the formation of cavities, usually show a decided tendency to heal, and that under appropriate treatment, persons with extensive consolidations and great cavities in the lungs may often for a long time be kept in a tolerable state, nay, comparatively even in a state of good health. *The greatest danger to most phthisical patients is the development of tubercles.*

Of course this view, that most phthisical patients have no

tubercles in the beginning, but that many of them become tuberculous in the course of the disease, stands most of all in opposition to the prevailing doctrine; but I do not doubt that it will gain ground, because it is the only one in accordance with the present state of pathological anatomy, and because it is founded on observations the correctness of which is generally admitted.

In fact, it was known to *Laënnec* that pulmonary phthisis is very commonly complicated with tuberculosis, only his explanation of this occurrence was different from ours. *Laënnec* thus sums up the result of his observations:—"Il est beaucoup plus commun de trouver une *excavation* et quelques *tubercules crus* déjà avancés dans le sommet des poumons, et le reste de ces organes encore crépitant et sains d'ailleurs, farci d'une multitude innombrable de très petits *tubercules miliaires demi-transparens*, et dont presque aucun ne présente encore de point jaune centrale. Il est évident que ces tubercules miliaires sont le produit d'une éruption secondaire et fort postérieure à celle qui avait donné lieu aux excavations. Les résultats de l'ouverte des cadavres, comparés à ceux de l'observation des malades, m'ont convaincu que ces éruptions secondaires se font à l'époque où les tubercules formés les premiers commencent à se ramollir."* These sentences contain, although in other words, still, in fact, exactly the same as we have asserted. The only difference consists in the explanation of that morbid process by which the formation of the softened deposits and of the cavities in the apex of the lung has been brought about. *Laënnec* makes all cheesy deposits and all cavities in the lungs depend upon a preceding tuberculosis, and it was therefore only consistent for him to declare a fresh eruption of miliary tubercles, which were found by the side of those old morbid changes in the lung, as a *secondary* eruption of tubercles. We, on the contrary, are convinced that the cheesy infiltrations and the cavities in the lung are, with rare exceptions, the products of pneumonic processes, and we must therefore designate the supervening development of tubercles as a *complication*.

Yet the frequent occurrence of tubercles in lungs which contain the remnants of chronic inflammations is in such striking contrast to the rare occurrence of tubercles in lungs which are free from cheesy infiltrations and cavities, that we can hardly

* *Laënnec*, traité de l'auscultation mediate. Paris, 1831, tome ii. p. 27

consider that complication as merely accidental, but we are driven to presume some *causal connection* between the tubercles themselves and those nutritive changes in the lungs which usually precede their development. But all doubt that such a causal connection exists must disappear when the peculiar distribution of tubercles in the lungs of phthisical patients is taken into consideration. If there are only few tubercles, they are almost exclusively found in the immediate neighbourhood of cavities or cheesy deposits, and if the tubercles are scattered all over the lungs, we can nevertheless, as a rule, not be mistaken in assuming that they have spread from those places, because near them are found the most numerous and apparently oldest tubercles.

No doubt, the frequency of this complication, and the dependence of the development of tubercles upon the previous changes of nutrition in the lungs, which in most cases is quite unmistakable, has materially helped to support and to confirm Laënnec's theory. It was natural from this state of things to draw the conclusion that the inflammatory processes and the new growth, appearing under the form of miliary tubercles, were to be regarded as different stages, or as different degrees of development of one and the same disease. Even the difference in the anatomical appearance of the two forms of nutritive change was by no means opposed to such a view of the case. If we do not hesitate to refer the syphilitic inflammations and new growths, which are called gummatæ or tubercular syphilitomata, to one and the same constitutional disease, then we must not object if the attempt is made to refer the pneumonic changes and the tubercular new growth which, just as frequently as in the former disease, go side by side, to the common source of some constitutional disposition (*disposition générale*, Laënnec).

But there are reasons quite other than the anatomical difference of both processes which in a striking manner refute the correctness of that theory, much as it may appear plausible at first sight.

In the first instance, we must again repeat that not one single specific form, but that *all* forms of pneumonia, although with different frequency, may lead to cheesy infiltrations and to the formation of cavities in the lungs; and we must add, that in those cases in which this termination takes place, the danger of a complicating tuberculosis is exactly the same, whether the cheesy

products and the cavities be the remnants of a common acute or of a catarrhal pneumonia, and whether the latter have come on as an acute disease, or may have gradually been developed. That chronic catarrhal pneumonia—the so-called gelatinous infiltration—leads, more frequently than the other forms of pneumonia, to tuberculosis, has its cause simply in this, that its products, more frequently than those of a common acute or of an acute catarrhal pneumonia, undergo a cheesy metamorphosis.

To this must be added another most remarkable fact, namely, that almost without an exception, when tubercles are formed in a lung which was previously healthy, and free from cheesy deposits and cavities, *cheesy products, which may have originated in the most various morbid processes, are found in other organs.*

Virchow,* who, however, lays much less stress on this circumstance than we do, allows that the question might very well be raised whether there ever occurs an eruption of miliary tubercles without the previous existence of cheesy, or, in *Laënnec's* meaning, softened primary deposits; and that the answer to this question must be, that such an occurrence is exceedingly rare, and that, in almost every case, on careful examination there would be found, somewhere or other, an old cheesy deposit.

It is only in rare cases that the cheesy degenerations, which are present in other organs, and which are succeeded by an eruption of tubercle, are the remnants of tuberculosis, or of a process analogous to that of pneumonia. As a rule, they are either enlarged lymphatic glands which, having been originally swelled by cellular hyperplasia, have afterwards undergone cheesy degeneration; or the cheesy remnants of pleuritic, pericardial, or peritonitic effusions; or the products of chronic inflammations of joints, bones, etc., which have degenerated in the same way. *Buhl*,† who still uses the old term “tubercle” for cheesy deposits, is perfectly right in maintaining that *every tissue and every exudation, at a certain stage of its retrograde metamorphosis, may be transformed into “tubercle.”*

Even this comparatively frequent coincidence of an eruption

* *Virchow, die krankhaften Geschwülste.* Berlin, 1864-65, Bd. ii. p. 724.

† *Zeitschrift für rationelle Medicin von Henle u. Pfeiffer.* Neue Folge, Bd. xiii. s. 51.

of tubercles in the lungs, with the existence of cheesy masses in other organs, can by no means be regarded as accidental. Such an assertion (leaving quite out of the question the great probability of a causal relation furnished by the reasons given above) would be in striking discord with the results of daily medical experience. Practitioners know very well that even to a previously healthy man a pleuritic effusion which has lasted some time, and has at length become inspissated and cheesy, or a traumatic inflammation of a joint, or any other accidental disease which leaves cheesy products behind, are dangerous enemies, because they are followed in a great number of cases by the development of tuberculosis of the lungs. Were it not for this experience, the term "tuberculisation," to designate cheesy metamorphosis of exudations and other morbid products, would certainly have been given up long ago.

If, after this explanation, we again repeat that pulmonary tuberculosis follows the pneumonic processes under discussion only in those cases in which they have led to cheesy infiltrations, and that—as was already known to *Laënnec**—the eruption of tubercles occurs only at the time when the cheesy deposits begin to soften, we can now give it as our opinion that the connection of the tubercles in the lungs with the other changes of nutrition which usually precede them, is by no means a direct and immediate one, consisting in a common origin from one and the same constitutional disorder, but only an *indirect one brought about by the cheesy metamorphosis of the pneumonic products*. But we may even give this sentence a more general meaning, and say that *tuberculosis is in most cases a secondary disease originating, in some way unknown to us, in the action of cheesy morbid products on the organism*. We purposely avoid adding to this view—which, as a matter of course, holds good also for the secondary miliary eruptions caused by cheesy tubercular masses—any hypotheses as to the manner in which cheesy metamorphosis, or the presence of cheesy substances, causes the development of tubercles, in order not to weaken the impression of the above statement, which is founded on facts and can hardly be objected to, and which is of great importance, not only for the proper understanding of the etiology and symptomatology, but also for the prophylaxis of tuberculosis.

* Compare the last sentence of the above quotation from *Laënnec*.

Buhl has decidedly pronounced the *constant* dependence of miliary tubercles on pre-existing cheesy products; but he has gone even further in designating with the same confidence miliary tuberculosis as an infectious disease caused by the reception into the blood of the "tubercular poison," and in comparing it to pyæmia, small-pox, etc. I am convinced that this too exclusive view, and the conclusions which this acute observer has drawn from the facts, and which certainly go too far,* have prevented his excellent paper from having that reforming influence on the clinical notions of pulmonary tuberculosis and plthisis which otherwise would certainly not have failed it.

Among *Buhl's* twenty-three cases of miliary tubercles, there are two in which, at the autopsy, no pre-existing cheesy deposit and no cavity were found; and the number of such cases might be considerably increased, although it would always remain small in comparison to the large number of those in which the eruption is undoubtedly of a secondary nature. To assert the *constant* dependence of tubercles upon cheesy morbid products is one-sided and exaggerated. The assumption of an infection of the blood by the cheesy products has something very enticing in the case of acute miliary tuberculosis occurring in most of the organs, and having, indeed, all the appearances of an acute infectious disease, but seems to me not to apply to a tuberculosis limited to certain parts, and gradually and slowly spreading with the symptoms of hectic fever. Nevertheless, I do not consider the objections raised by *Virchow* against *Buhl's* theory of infection to be well founded. Even if *Buhl* were quite right, it is not every cheesy deposit that need of necessity be followed by tuberculosis, just as it is not every putrid abscess that leads to septiæmia. In the same manner may the absorption of cheesy masses, altered by fatty change and liquefaction, or by some other influences, and so losing their infectious properties, become innocuous. Similar occurrences are observed in the case of localised gangrenous and putrid affections.

On the other hand, the peculiar mode of extension repeatedly alluded to, and the not infrequent limitation of tubercles to the

* Among other things, *Buhl* says:—"The proposition that miliary tuberculosis is an infectious disease has also its converse meaning, i. e. an infectious disease in an individual who is affected with cheesy deposits or cavities in his lungs is a miliary tuberculosis." *l. c. p. 51.*

immediate neighbourhood of cheesy products, seem to me to speak much more in favour of a local influence in which, perhaps, the lymphatics take a prominent part, than in favour of an infection of the blood. No doubt the fact that the lungs, more frequently than any other organ, become the seat of tubercles, and that this tuberculosis remains very frequently limited to the lungs, has its cause in this, that the diseases of the lungs, much more easily than those of other organs, leave cheesy products behind them, and that in most, although by no means in all, cases the eruption of tubercles remains confined to certain not very wide limits.

The common doctrine, that tuberculosis of the lungs leads very frequently to a *secondary tuberculosis of the intestines* rests, at least partly, on a wrong interpretation of what is found post-mortem. It is quite true that in a great number of autopsies cavities are found in the lungs and ulcers in the intestines, *i. e.* a *complication of pulmonary with intestinal phthisis*. It is also quite common, in those cases in which, besides cavities and cheesy deposits, miliary tubercles are present in the lungs, to find the serous membrane of the intestines, over those places which correspond to ulcers beneath it, studded with tubercles, and in these cases we have a complication of *pulmonary with intestinal tuberculosis*.

But it by no means follows from this that the intestinal is caused by the pulmonary phthisis, and the intestinal tuberculosis by that of the lungs. On the contrary, the unbiased examination of the anatomical changes and the consideration of the symptoms which were observed during life, lead to quite another conclusion.

Although I am so far disinclined to give a too extended meaning to the term “*scrofulosis*,” that, when we come to speak of its etiology, I shall protest against this abuse of the word, still, for certain, and by no means rare, forms of intestinal ulcerations which are classed almost generally with the tubercular ulcers of the intestines, I consider the term “*scrofulous ulcers of the intestine*” to be the only proper and right one. As “*scrofulous*” are generally designated those ulcers which originate in the inflammation and ulceration of a lymphatic gland which had undergone cell-proliferation, and usually also cheesy transformation. They occur, as is well known, most frequently on

the neck, accompanying moist eruptions of the scalp or face, otorrhœa, or diseases of the mucous membrane of the mouth, etc. They are marked by their great obstinacy, by their spreading to the adjacent connective tissue, and by their irregular, indented, and frequently undermined edges. In the same manner the intestinal ulcers in question have their origin evidently in the *breaking down of follicles which were previously enlarged by cell-proliferation and had undergone cheesy transformation.* The enlargement of these little *lymphatic glands* accompanies chronic catarrh of the intestine, in the same manner as the swelling of the cervical glands follows an eczematous eruption, etc. No less do the obstinacy, the spreading of the ulceration to the surrounding sub-mucous tissue, as well as the irregular, indented, and undermined edges, remind one forcibly of the scrofulous ulcers which we have so frequent an opportunity of observing on external parts, especially on the neck. If we add that "intestinal tuberculosis" is generally considered a disease of particular frequency in childhood, in contrast to pulmonary tuberculosis, and that childhood is also distinguished by serofulvous eruptions, serofulvous catarrhs (as *Virchow* very appropriately named the catarrhs with considerable swelling and subsequent cheesy degeneration of the respective lymphatic glands), as well as serofulvous ulcerations; and if we draw attention to the fact that the ulcerations in question frequently show the distinct marks of a very ancient origin, viz. that they are often partly cicatrised, that the mesenteric glands contain, as a rule, cretaceous masses or solid earthy concretions, then it will be admitted that for such ulcerations the name "tubercular ulcers" is a most inappropriate one, and ought to be replaced by that of "serofulvous ulcers." Even a careful inquiry into the history of the patient leads in some cases to the result at which we arrive by the unprejudiced consideration of the anatomical changes. It will appear that the patients have already during childhood frequently suffered from diarrhoea and colic, and later from habitual costiveness, interrupted at times by intercurrent diarrhoea. Not unfrequently the development and even the growth of the patient have remained so stunted, that lads of twenty have the appearance of small schoolboys.

Of course I do not mean to say that all intestinal ulcerations which are looked upon as secondary tubercular ulcerations are of this serofulvous nature, but I would only caution against con-

founding the two forms ; and with this view mainly, I must add that *an eruption of tubercles of quite recent date is found on the serous membrane, outside of very old scrofulous ulcers, just as frequently as in the lungs* fresh miliary tubercles are found by the side of old cavities.

This coincidence, namely, *the frequent superintervention of a tuberculosis of the intestine upon an intestinal phthisis*, which cannot be mistaken, if only our eyes are not obscured by prejudices, confirms to a certain extent the correctness of our opinion that a similar relation exists in the lungs, and that “patients suffering from pulmonary phthisis are in danger of getting tubercles.” On the other hand, the correctness, or at all events the universal correctness, of *Buhl’s theory*, according to which miliary tuberculosis is the consequence of an infection of the *blood* with the tubercular poison generated in cheesy deposits, is contradicted by those not unfrequent cases in which tubercles are found on the intestinal serous membrane *exclusively* in places corresponding to intestinal ulcerations beneath, and in the lungs in the immediate neighbourhood of cavities and old cheesy deposits, whilst not a single miliary tubercle can be detected elsewhere.

Most of the prevailing opinions on the inherited or acquired disposition to *pulmonary tuberculosis*, and especially those bearing on the former, have only a very limited value, because the observations on which they are founded refer by no means to tuberculosis alone, but also to all those processes which, since *Laënnec*, have been confounded with tuberculosis. The same remark applies to the statistical statements as to the frequent occurrence of tuberculosis in general, its greater or less frequency under the influence of certain conditions, the geographical distribution of the disease, etc. On the other hand, the insight into the causes of *pulmonary phthisis* has been materially aided by the better understanding of the nature of the nutritive changes which constitute it, and especially by the discovery of the dependence of tuberculosis upon those other morbid processes which usually precede it.

I do not hesitate to say, in spite of all assertions to the contrary, that *it is by no means sufficiently proved that tuberculosis, in the strictest sense, is an inheritable disease*. Speaking exactly, an inherited tuberculosis can only be assumed where the father or the mother were, at the time of conception, suffering from true

tuberculosis, and where the child does not so much get a disease which leads to tuberculosis, but is affected with tuberculosis without any intermediate affection. In infancy, during which tuberculosis of the lungs is rare, there can only be adduced, as an example of this, in the strictest sense of the word, inherited tuberculosis, that of the meninges, which is comparatively frequent at that period of life. This has been done by *Virchow*, among others. But apart from the difficulty of proving that the parents of such children were, at the time of the conception, really suffering from tuberculosis, even this miliary *meningeal* tuberculosis, which nearly always leads to hydrocephalus, is only in the rarest cases the result of a primary development of tubercles. I scarcely recollect a case in which, at the autopsy of a child which had died of meningeal tuberculosis and acute hydrocephalus, I did not find cheesy bronchial glands or other cheesy deposits. *Buhl* declares expressly, that of nine cases of acute hydrocephalus, with miliary tubercles in the pia mater, the tuberculosis had not in a single one occurred as an isolated affection; and *Rokitansky** lays it down as a rule, that acute hydrocephalus of children occurs with hypertrophy of the lymphatic glands (scrofulosis), etc.

With just as little reason can, as a rule, those cases be adduced as a proof that tuberculosis is inheritable, where grown-up persons, even though they are descended from notoriously tuberculous parents, have become tuberculous themselves; for in such cases the tuberculosis is nearly always, in the parents as well as in the child, only the last link in a chain of morbid nutritive changes which have brought about the development of tubercles; so that it is by no means the tuberculosis itself that has been inherited.

Quite as decidedly as we have opposed the *evidence that tuberculosis is inheritable*, must we pronounce in favour of a frequent occurrence of an *inherited disposition to pulmonary phthisis*. But even here what is transmitted is not the disease itself, but a weakness and vulnerability of constitution which in the parents has already either been the cause of pulmonary phthisis, or has only been developed in them by the disease. The weakness and vulnerability which is transmitted to the children may in the

* *Lehrbuch der patholog. Anatomie*, 3rd ed. Vol. II. p. 418.

parents depend also upon other causes besides pulmonary phthisis ; and it is therefore commonly said that children born of parents who suffer from syphilis or other exhausting diseases, or who at the time of conception were aged and decrepid, have inherited a *disposition* to pulmonary consumption. It would be more correct in such cases to speak of a disposition with which the children are *born*, than of one which has been *inherited* by them.

There are, however, numerous exceptions to the rule that parents who are phthisical or debilitated by diseases or advanced age procreate children with a tendency to consumption. Nor is it at all rare that, under favourable conditions, an innate or inherited tendency to phthisis should disappear. To obtain this end will further on be laid down as one of the most important rules of the prophylaxis of consumption.

I shall not be considered an idle and unpractical theoriser in opposing the inheritable disposition to tuberculosis as a thing which is not proved, while I acknowledge the disposition to pulmonary phthisis to be inheritable. I have repeatedly seen that physicians whom I had convinced of the correctness of this view were not only released from an exaggerated and helpless anxiety for the future of their own children who had been born of phthisical mothers, but had also been induced to take energetic measures in order to ward off the threatened danger.

The noxious influences by which the tendency to consumption is *acquired*, or the inherited disposition intensified, are sufficiently known, and I shall not therefore enter into their discussion here. Insufficient and improper food, bad and damp dwellings, want of exercise and of fresh air, and various weakening and exhausting influences, such as venereal excesses, long-continued suckling, depressing mental conditions, etc., are justly considered as such. I will only add a few words on the diseases which dispose to pulmonary phthisis.

Among the valuable theses which were written under the direction of *Dittrich*, there are three excellent papers on the complication of pulmonary phthisis (tuberculosis) with diabetes mellitus, with carcinomatous diseases, and with gastric ulcer.* Accord-

* Die Harnruhr, von Dr. R. Leupoldt. Erlangen, 1853. Die Combinationsverhältnisse des Krebses und der Tuberculose, von Dr. C. Martius. Erlangen, 1853. Von der Combination der Tuberculose mit dem runden Magengeschwür, von Dr. H. Papellier. Erlangen, 1861.

ing to the statement of his pupils, *Dittrich* had arrived at the conclusion that the diseases in question, as all other diseases which are followed by tabes, or marasmus præmaturus, do not rarely lay the foundation of pulmonary phthisis.

Although I do not agree with the explanation given by this observer, who, no less distinguished as physician than as pathologist, was yet completely biassed to the theory of the "crases" (blood-changes) of the Vienna school; and although we cannot refer tuberculosis to a disease of the blood-fibrin, caused by the injurious influence on the blood of substances formed in an excessive retrograde metamorphosis, yet we must fully acknowledge the correctness of the observed facts.

The injurious influence which diseases have on the constitution, and thereby on the tendency to consumption, manifests itself most frequently and in the most lasting manner in earliest infancy. It is fortunate if children escape disease, particularly in the first years of their life, during which by far the most rapid development of the body takes place, and when by favourable or unfavourable external circumstances the foundation is laid, in a great measure, for a strong and robust, or a weak and delicate health. Even vaccination may, by the febrile disturbance preceding the eruption, as well as by that accompanying the suppuration, both of which are never absent, and according to my numerous thermometrical observations sometimes reach a very high degree, considerably weaken, more especially those children who are not very strong, and may leave behind it the germs of a disposition to consumption. This fact is often wrongly interpreted by uneducated and prejudiced physicians, and has led to the strange theory that serofulosis and tuberculosis are caused by the vaccine poison continuing to operate in the system. Although this theory is, in my opinion, sheer nonsense, and much as I consider the agitation of those who hold it against vaccination in general as objectionable and mischievous, yet I must protest against unconditional compulsory vaccination, particularly during the first two years of life. At times when there is no epidemic of small-pox, we even expressly forbid the vaccination of weakly and delicate children, and unless there are cases of variola in the place itself, or its neighbourhood, we delay it until the constitution has been strengthened, and until a time when no harm

is to be apprehended from the short and, as a rule, inconsiderable illness which follows it.

It is evident that all influences by which the inherited as well as the acquired tendency to pulmonary consumption is caused, agree in this, that *they hinder or disturb the normal development and maintenance of the organism.* When this influence operates before the formation of the body is completed, its consequences are visible more or less in the whole habitus of the individual. Although, as a rule, the growth of the body in length has not been retarded, its development in circumference has suffered in comparison. The skin is delicate, the subcutaneous tissue contains but little fat, the muscles are badly developed, the long bones are thin, the thorax presents the well-known "paralytic form" which depends upon the insufficient development of its muscles. Such individuals are generally spoken of as being predisposed to pulmonary consumption, or, what is the same, as having a "*phthisical habitus.*" The opposition which has even recently been raised against these terms from many sides, and particularly the objection that not every one with a phthisical habitus becomes consumptive, shows how deeply *Laënnec's* doctrine has taken root, viz. that tuberculosis, and phthisis with it, are developed quite independently of external causes.

From our point of view there is nothing at all strange in the fact that one man with a well-marked disposition to pulmonary consumption remains free from the disease and reaches old age, whilst another who has no such predisposition becomes phthisical by external injurious influences, by an intercurrent illness, etc., and may find an early death. We can only very urgently recommend that even a trifling bronchial catarrh occurring in an individual with a "*phthisical habitus*" should be looked upon as a dangerous enemy and treated with the utmost care.

Experience shows that *delicate and ill-nourished individuals have, as a rule, little power of resistance against injurious influences,* and that generally they fall ill more easily, and recover from their illnesses slower, than the strong and well-nourished. The frequency, however, with which the several organs of the body become affected varies according to age. Whilst in infancy the membranes of the brain, the larynx, the skin, the intestines, etc., are chiefly liable to disease, the affections of these organs become

less frequent at the time of puberty, and in their steady attacks of bronchial haemorrhage, as well as of acute and chronic inflammations of the lung, increase in frequency.

But the weak and ill-nourished differ from the strong and well-nourished, not only in the possession of this vulnerability, but also because the inflammatory nutritive changes occurring in them lead, as a rule, to a very abundant production of indifferent and perishable cells. It is said of such individuals, among other things, that they have a "bad skin for healing," because comparatively trifling traumatic injuries cause in them a strong irritation of the injured parts, leading to an abundant production of pus-cells. This peculiarity seems partly to depend on the fact that an increased irritability is associated with weakness, partly on the fact that inflammatory irritation of badly nourished and imperfectly developed organs leads more frequently to the formation of frail and perishable cells than to the formation of those from which young tissue is formed.

To sum up the most important points of the preceding discussion, we arrive at the following conclusions:—

1. The consolidations and destructions of the lung which form the anatomical basis of pulmonary phthisis are, as a rule, the products of pneumonic processes; and the more abundantly cellular elements accumulate in the alveoli, and the longer this accumulation persists, the more readily does a pneumonia lead to phthisis, because the cheesy metamorphosis of inflammatory infiltrations is thereby favoured.

2. Pneumonia resulting in cheesy infiltration occurs chiefly in delicate, badly nourished persons: this experience is partly founded on the great vulnerability of such persons, and partly on the fact that the inflammatory nutritive changes occurring in them show a tendency to an abundant production of cells, and thereby to a cheesy metamorphosis of the inflammatory products.

3. Pneumonia of this character does not occur usually, even in delicate and vulnerable persons, before the age at which pulmonary diseases generally become more frequent; and it then takes the place of those inflammatory diseases of other organs which have prevailed during the preceding period of life.

All the influences, indeed, which dispose to pulmonary consumption, from the conception by a consumptive father to the

exhaustion of the body by a long and serious illness, become perfectly clear and intelligible by these propositions, the correctness of which can hardly be doubted. Nor can it appear at all surprising that the disposition to pulmonary consumption will be more or less clearly expressed in the poor and delicate habitus of an individual.

We must not omit to add, however, that there are some exceptions to this rule. There are instances of individuals without any signs of weakness or bad nutrition falling ill very frequently and after trifling causes, and recovering but very slowly, whilst others who are apparently delicate and badly nourished possess great power of resistance against injurious influences, whereby they frequently escape illness altogether, and if nutritive disturbances take place in them at all, they quickly and safely pass off again. On account of these exceptional cases, the actual experience in a person of really existing great vulnerability, is a more reliable indication of his phthisical disposition than his delicate and sickly appearance. A man who in his infancy has had attacks of croup or pseudo-croup, and who has afterwards repeatedly suffered from catarrh of the bronchial mucous membrane, from epistaxis or bronchial haemorrhage, or from pneumonia, etc., is, even with a healthy colour of his cheeks and a robust appearance, in danger of acquiring pulmonary consumption, and must therefore, in apparently trifling catarrhal affections, be watched and treated with greater care than one who has no previous history of that kind. Strictly speaking, we cannot agree with the assertion that the tendency to pulmonary consumption is, as a rule, "*combined*" with a general tendency to inflammations, for, according to our opinion, it is *based on*, or rather is *identical with* it.

In conclusion, we can explain in a few words our position as to the often ventilated question about the *relation of scrofulosis to pulmonary consumption*.

In the increased vulnerability, with which are associated, as a rule, an increased irritability and a tendency of the inflamed tissues to abundant cell-production, the lymphatic glands, especially in childhood, very frequently share. While in individuals who have no such particular disposition the lymphatic glands, which receive their lymph from the inflamed parts, swell, or become inflamed and suppurate, only in the more severe and

malignant inflammations, in those who have this tendency, even slight irritation of the glands set up by trifling and benign inflammations about the origin of their lymphatic vessels is sufficient to arouse an abundant production of cells. Inflammation and suppuration of the glands take place by no means in all, or even in the majority of cases; on the contrary, the morbid process stirred up by the irritation remains, as a rule, limited to a simple cellular hyperplasia and a swelling of the glands through abundant accumulation of the normal cellular elements. Such glandular swellings, however, show, like all other morbid processes in such individuals, great obstinacy, and, in numerous cases, the more abundant the accumulation of cellular elements, the more readily does a partial or diffuse cheesy degeneration of the swollen glands occur.

Individuals whose lymphatic glands thus participate in the general vulnerability and in the disposition of the tissues to abundant cell-growth, when under inflammatory irritation, are called *scrofulous*.

We lay particular stress on the *constant* combination in scrofulous individuals of the disposition to swellings of the lymphatic glands by cell-hyperplasia, with a general tendency to illness, and more especially to inflammatory diseases. This latter is, as a rule, so well marked in such cases, that the immediate causes of the "scrofulous exanthemata," the "scrofulous ophthalmia," and the "scrofulous catarrhs," and other so-called scrofulous affections, easily escape observation. It frequently seems as if those inflammations had appeared spontaneously, or, as the popular saying is, had come on "by themselves." There is no anatomical sign by which a "scrofulous skin-eruption," or a "scrofulous ophthalmia," could be distinguished from the like affections of a non-scrofulous origin. The dependence of those inflammatory diseases upon trifling causes, their frequent repetition and their obstinacy are, besides the participation of the lymphatic glands, the only characters from which their scrofulous nature is concluded.

If then the slight power of resistance against injurious influences, the "vulnerability" of scrofulous individuals, has not disappeared before the time at which the *lungs* are chiefly liable to disease, whilst moist eruptions, and obstinate diseases of the cornea or conjunctiva, etc., become less frequent, such

persons are then attacked with pneumonia just as readily, and after just as trifling causes, as they formerly were with eruptions, ophthalmia, etc., and these attacks of pneumonia have the same obstinacy which the so-called scrofulous affections presented ; a circumstance which essentially favours their termination in cheesy infiltration.

We have already mentioned that sometimes it happens even in children, although much more rarely than in adults, and more especially in the course of measles and whooping-cough, that a catarrh spreads from the smallest bronchi into the alveoli and leads to pneumonia, which may terminate in cheesy infiltration. Although this occurs chiefly in scrofulous children, still we hesitate to adopt for this kind of pneumonia the term "*scrofulous pneumonia*," because it may easily lead to misunderstandings.

On the other hand, we consider as most practical and acceptable the proposal of *Virchow* to call a catarrh of the bronchial mucous membrane, which in a scrofulous individual leads to a considerable and obstinate cellular hyperplasia in the lymphatic glands, in the same manner as a humid eruption on the head causes a similar swelling of the cervical glands, a "*scrofulous catarrh.*"

If we do not take into account those rare cases in which cheesy bronchial glands, after having softened and broken down, open into a bronchus and lead to a peculiar form of pulmonary phthisis, we can sum up the relation which, according to our opinion, exists between scrofulosis and pulmonary consumption in the following sentences :—

1. Adults who in their childhood have been scrofulous have, unless the vulnerability on which scrofulosis depends has disappeared, a well-marked tendency to pneumonia, terminating in cheesy infiltration and pulmonary consumption.

2. In individuals who formerly were scrofulous, persistent cheesy bronchial glands give rise, in some instances, to the development of tubercles in the lungs and to a *tubercular* phthisis.

3. Individuals in whom an extinct scrofulosis has not left behind either an increased vulnerability or cheesy masses in the lymphatic glands, possess no greater disposition to pulmonary phthisis than individuals who have never been scrofulous.

I consider the almost universal opinion, that pulmonary consumption arises independently of accidental or immediate exciting causes, in consequence alone of a "*diathesis*," to be as unproved

as it is dangerous. Evidently the circumstance that it would be in striking opposition to the theory which no one ventured to doubt, to assert that pulmonary consumption could be excited by external causes, prevented an unprejudiced interpretation of the facts. Thus *Lebert*, among others, says:—"It is important that, as a rule, no particular cause can be detected for the commencement of chronic pulmonary tuberculosis, that 'catching cold,' in particular, seems, generally, to be without any direct influence; and this is so true (!) that, provided we are only not satisfied with the vague stories of the patients, but examine carefully and strictly into their previous history, it may be concluded that a cough whose significance is not clear does not depend upon tuberculosis whenever it can be made out with certainty that it has commenced with a cold in the head, or angina tonsillaris, in a word, as an acute catarrh of the mucous membrane after 'taking cold'; and the *popular opinion that a neglected cold leads to consumption is erroneous.*"* How can these sentences be reconciled with the experience of any physician in large practice, with the many instances in which the cough, to which the other symptoms of consumption were soon added, began on a certain day, after a distinctly injurious influence? It is fortunate that the general public are more careful with those in whom a disposition to phthisis is suspected than would be necessary if the ideas of the majority of physicians as to the nature of pulmonary consumption were correct.

Among the immediate causes which can excite the disease in persons in whom a more or less marked tendency to pulmonary phthisis exists must, we believe, be enumerated *all influences which are followed by catarrh of the bronchi and by hyperæmia of the lungs.* We need not further justify this assertion, for its correctness is quite clear to any one who has left the stand-point from which every pulmonary phthisis is considered as a new growth, and who has convinced himself of the fact that in the majority of cases, catarrhal pneumonia is the essence of the disease. We shall further on discuss the measures which are in most cases culpably neglected by those who, when they find a catarrh in the apex of the lung, at once assume it to have originated in,

* Lebert, Handbuch der practischen Medicin, 3rd Edition, Vol. II. p. 130.

and to be kept up by, a deposit of tubercle, but which, as a matter of course, will be employed with the greatest strictness by those who fear lest a simple catarrh originating in a “cold” may spread to the alveoli, and may thus lead to consumption.

The origin of *congestion of the lungs in excessive exertions of the body*, with accelerated and increased action of the heart, which had long been known, but not sufficiently understood, has, I believe, been brought much nearer to its physiological explanation by *Dr. Diesterweg's** treatise, which contains a series of valuable and striking truths, though, unfortunately, they are not expressed in quite a suitable form. I possess among my reports of cases a number of examples in which excessive dancing, or similar exertions, were immediately followed by the first signs of a commencing pulmonary consumption, without any probability of cold having been taken at the same time. To this class also, perhaps, belong some of the cases in which pulmonary consumption is said to have been caused by drinking cold water when the body was overheated by exercise.

Besides colds and excessive exertions of the body, *direct irritation of the lungs and the bronchial mucous membrane by foreign bodies* plays a most important part among the immediate exciting causes of pulmonary consumption. The frequency of the disease in certain trades can easily be explained from our point of view, whereas it would be unintelligible if in all, or even in the majority of cases of pulmonary consumption, a neoplasm in the lung were the essence of the disease. Anthracosis and siderosis pulmonum (pneumo-koniosis, *Zenker*) consist, as a rule, in pulmonary phthisis caused by the inhalation of coal- or iron-dust.

Among the various foreign bodies which, by direct irritation of the walls of the bronchi and of the parenchyma of the lung, lead to phthisis, *the blood which, after a haemoptysis or pneumorrhagia, remains behind and coagulates in the bronchi and alveoli* exerts this influence the most frequently. From *Hippocrates*, whose aphorism, “Ἐπὶ αἷματος ἐμέτῳ φθόη καὶ τοῦ πνου κάταρσις ἀνω,” has been frequently quoted, down to *Laënnec*, haemoptysis was, it is well known, considered one of the most frequent causes

* Kritische Beiträge zur Physiologie und Pathologie, mit besonderer Berücksichtigung des *Niemeyer*'schen Lehrbuchs. I. Heft., der Lungenkreislauf. Frankfurt, a. M., 1866.

of pulmonary consumption. Thus, among others, *Hoffmann** expresses himself in the following manner : “Verum adhuc sunt alia phthiseos initia, maximeque hæmoptysis, ubi inculta a medentibus tractatur, aut si paullo major crux portio est quæ eadem amissa fuit. *Tum enim facile sanguis ex pulmonum vasculis intra vesiculas aëreas extravasatur et stasi concepta putrescit, partes vicinas corrodit ac demum simositas efformat, vel in nodos et tubercula coit.* Et profecto, si vel meam unius hac de re experientiam adducere licet, certa asseverare fide possum, dimidiam fere partem phthisicorum, qui se curæ meæ tradiderunt, ab hæmoptysi prægressa et male curata primam mali sui originem accepisse.”

The doctrine of the relation of hæmoptysis to phthisis has taken quite a different form since *Laënnec's* time. He declared that the older view was only based on an inconsiderate application of the maxim, “post hoc, ergo propter hoc,” and that even in those cases in which hæmoptysis precedes the cough, the expectoration, and all other signs of pulmonary phthisis, tubercles are already present in the lungs. *Louis* declared, with the same distinctness, that in answer to the question whether a hæmoptysis which preceded cough and expectoration was antecedent to tubercles or their first symptoms only, he was compelled to say, that hæmoptysis “d'une manière infiniment probable” was indicative of the presence of tubercles in the lungs.†

This new doctrine, as well as the entire doctrine on pulmonary consumption, was rapidly adopted, and has up to this day remained the prevailing one. This is the more remarkable, as *Laënnec's* assertion rested on very weak grounds, and was for the most part based on mere theoretical reasoning. For *Laënnec* declared that, from an anatomical point of view, it was impossible to understand how hæmoptysis could lead to tuberculosis: and added he had never observed that hæmoptoic congestion was gradually transformed into miliary tubercles.‡ And, indeed, if the doctrine that every case of phthisis consists in tuberculosis were correct, we should be obliged to admit that hæmoptysis could not very well lead to pulmonary consumption, as the exuded blood is certainly not transformed into tubercles. As soon, however, as

* Friedericī Hoffmanni opera omnia, T. iii. Genevæ, 1740, p. 285.

† Recherches anatomico-pathologiques sur la phthisie. Paris, 1823, p. 194.

‡ l. c., Tom. ii. p. 118.

Laënnec's hypothesis, that phthisis was always caused by a new growth, was refuted, a reform of the doctrine concerning the relation of pulmonary haemorrhage to pulmonary consumption ought to have taken place. The question should have been asked whether, even in those cases in which pulmonary consumption was for the most part caused by pneumonic alterations, it appeared anatomically impossible that a haemoptysis should have formed the starting-point for pulmonary consumption; and no other answer could have been given to this question than that it would, on the contrary, be unintelligible if the coagulated blood remaining in the bronchi and alveoli were not occasionally to give rise to pneumonic processes, and, by their undergoing the cheesy metamorphosis, to lead to consumption. Do we not frequently observe that even the walls of blood-vessels become subject to inflammatory changes as soon as their contents coagulate? But I should not lay much stress on this theoretical reasoning were not numberless facts, which cannot be misunderstood, in favour of the view that haemoptysis is, indeed, one of the most frequent causes of pulmonary phthisis.

I do not hesitate to say, that *in the majority of cases haemoptysis is followed by a more or less serious irritation of the lung and pleura.* Since my attention has been directed to the occurrence of these consecutive attacks of pleuro-pneumonia, I have, almost without exception, been able to find, on the second or third day after the haemorrhage, an increase of the temperature of the body and of the frequency of the pulse, a disturbance of the general health, more or less severe pains in the lateral regions of the thorax, and frequently also fine moist râles, pleuritic friction, or a slight dulness, with diminished vesicular or with bronchial breathing. Even in cases in which a longer time had elapsed since the haemoptysis, it was generally easy to make out that in the next few days succeeding the haemorrhage, more or less clear signs of inflammatory changes in the respiratory organs had appeared. I find also in medical literature numerous observations recorded by others,* which confirm in a striking manner the frequency of these consecutive changes, and I cannot understand how so little notice has been taken of their constant occurrence.

* A particularly striking case, among others, is communicated by Bamberger, in the Würzburger Medicinische Zeitschrift, Vol. II., 1861, p. 340.

I am far from asserting that the pneumonic processes following an attack of haemoptysis leave behind them in all, or even in the majority of cases, cheesy infiltrations leading to pulmonary phthisis. On the contrary, their most common termination is in *resolution*. Frequently all symptoms disappear after a few days, and the patient is again convalescent.

In other cases, however, the rise of temperature and of the pulse continue for a longer time, the general health remains impaired in proportion to the continuance of the pyrexia, while slight pains in the chest, which the patients talk of as rheumatic, persist, the respiration remains hurried, and there is cough and muco-purulent expectoration. If besides these symptoms the percussion-sound is found dull in a more or less extensive region of the chest, if the respiratory murmur is of an indefinite character, and diminished or bronchial, and if the patients are rapidly consumed by the increasing pyrexia with evening exacerbations and abundant night perspirations, there is reason to fear that the pneumonic infiltration has undergone cheesy metamorphosis, and that the patients have fallen into consumption. Indeed, only the complete pre-occupation of the profession by *Laënnec's* doctrine explains why, even in such cases, there has been no hesitation in referring the consumption to a tuberculosis which had remained latent until the occurrence of the haemoptysis. By those who will judge without prejudice, most of the cases in which previously healthy persons are, immediately after an attack of haemoptysis, seized with galloping consumption, cannot be otherwise interpreted than by assuming that *the blood which remained behind in the bronchi and alveoli has led to a pneumonia undergoing cheesy transformation, the retained blood and the products of inflammation afterwards breaking down*, as is plainly described in the quotation from *Hoffmann*.

The following case is in this respect particularly instructive :

F. R. Wagner, tailor, 32 years old, was admitted into the Hospital on the 1st of January, 1862. According to his account, he enjoyed good health in his childhood ; from 1851-59 he served in the Neapolitan army, during which time he contracted syphilis, producing subsequently ulcers in the throat, eruptions on the skin, and swellings on the head, which, after some time, broke and left obstinate ulcerations. Since the winter of 1861, he began to cough and to have profuse expectoration ; several times also he brought up small quantities of blood, and he has gradually become very weak and emaciated. On

admission, a great part of the scalp is found transformed into a suppurating sore ; the skull is nowhere exposed or softened, but in several places there are deep depressions surrounded by irregular walls. The patient cannot say whether pieces of bone have come away. The penis is deformed by extensive losses of substance, numerous lymphatic glands of the cervical and inguinal regions are swelled, both arches of the palate are defective, and the uvula is absent. The skin is thin and pale, the panniculus adiposus has disappeared, the muscles are in a high degree atrophic. The percussion sound is dull over the left apex down to the third rib, its pitch varying when the mouth is opened or shut. In the second intercostal space there is distinct bruit de pot féle, and, as far as the dulness extends, there is loud bronchial breathing. In all other parts of the thorax nothing abnormal can be detected, either by percussion or by auscultation. The right lobe of the liver reaches down in the parasternal line about two inches below the margin of the ribs. There are no morbid symptoms on the part of the other abdominal organs ; the pulse beats 80 to 91 times in a minute ; the temperature of the body reaches 38° C. (100.4° F.) to 38.5° C. (101.3° F.)

Contrary to all expectation, the state of the patient improved in a striking manner during the month of January, while he freely took milk and iodide of iron and cod-liver oil. The pyrexia disappeared almost completely. Only two or three round muco-purulent sputa were expectorated during the day. His weight had increased by two pounds. The ulcers on the head progressed rapidly to cicatrisation.

On the 31st of January the patient had gone to bed feeling comparatively well. On the following morning we found him pale and anaemic, and on his table stood three basins filled to their edges with blood. This blood, presenting only on the surface a thin frothy layer, was almost completely coagulated to a dark, almost black, cake. Any one not acquainted with the facts would have supposed that the blood came from a profuse venesection. The patient, however, stated that he had brought up this enormous quantity of blood within a few minutes, and that at the time he had felt sure he should bleed to death.

In the first two days after the haemorrhage, the patient's state was, the great exhaustion excepted, tolerably good ; the physical signs in his chest were, with the exception of a fine moist râle all over the left lung, unchanged ; but on the third day he complained of sharp pains in the region of the left nipple. Pleuritic friction was both felt and heard over this place, the pulse became accelerated, the temperature rose. On the 9th of February, slight haemoptysis occurred again, and increased the exhaustion of the patient. From this time the disease made rapid progress. The whole of the left half of the thorax became dull and tympanitic on percussion ; vesicular breathing could not be heard anywhere. Instead of the previous scanty expectoration, a large quantity of grayish-green masses was brought up, the pulse increased to 120 in the minute, the temperature, according to the touch (the patient, who now lost heart very much, would not allow the

application of the thermometer), rose to a very high degree, abundant night sweats appeared, the sensorium became affected, and on the 29th of February, *i.e.* four weeks after the haemoptysis, the patient died with all the symptoms of a phthisis florida.

The autopsy was made, 30 hours after death, by Professor Liebermeister. From the very voluminous report I make the following abstract:—

"The left lung was at its apex firmly adherent; in the left pleura there was a moderate quantity of a bloody fluid, mixed with flakes of fibrin. The upper lobe of the left lung was considerably shrunk, and in its apex, somewhat nearer the external and anterior surface, there was a cavity of about the size of a hen's-egg, with sanguous, grumous contents. Its walls were excavated, but tolerably smooth. On its internal surface ran a large artery, whose walls were considerably thickened. Its canal, although somewhat narrowed, was not obliterated, nor could any opening, erosion, etc., be detected. The other parts of the upper lobe were devoid of air, partly of dark colour, like compressed lung-tissue, in some places cheesy, at others studded with small cavities with puriform contents. The lower lobe was large, hard, heavy, containing but little air, presenting on section numerous infiltrations from the size of a pea to that of a hazel-nut, which lay close to, sometimes touching, each other or running together.

"Between them there were smaller and larger places in which the parenchyma contained air. These air-containing portions amounted on a section to about a fourth part of the whole. Towards the margins of the lung the air-containing portions became more voluminous. Some of the infiltrations presented on section a distinctly granular appearance, in some places finer, in others coarse; the colour was in some places red, in others gray; in others, again, the two colours merged into each other, or both occurred together, on small spots. Altogether, these deposits had the characters of an acute pneumonia, changing from the red into the gray hepatisation. At some places, of the size of a lentil to that of a pea, a yellow discolouration was found in these infiltrations, and usually more or less in their centre, merging on the borders into the red or gray colour. Other places within the hepatisations were in the stage of cheesy transformation. These cheesy spots were of various sizes, part of them sharply defined and distinctly separated from the surrounding infiltrated lung-tissue. On the pleural covering numerous points, transmitting a yellowish colour, were seen. On cutting into them, cavities of the size of a pea, and smaller, appeared immediately below the surface, within a substance which had undergone cheesy transformation, and which was surrounded by tissue in a state of gray hepatisation. These small vomiceæ were filled with fluid, and presented numerous secondary excavations. Their walls were in some places only smooth and covered with a diphtheritic layer; in most of them numerous shreds of tissue projected into the cavities, or the remnants of the pulmonary tissue traversed them as more or less thick, ramified, strings. *The formation of the cavities was evidently due to the recent dis-*

integration of the cheesy parts. In some places there were two or more cavities in the same cheesy deposit, without any apparent communication with each other. In others, and more in the interior, there were places varying from the size of hazel-nuts to that of walnuts, presenting very numerous holes of the size of a pin's-head to almost that of a pea, one lying close to the other in a cheesy tissue.

"A bronchus of medium size, tending towards the external and inferior edge of the lung, was filled with a rather consistent, tough, puriform mass, which reached, as a tough puriform clot, from the point of division of the bronchus about two inches upwards. Near its upper end it was not adherent to the wall, which was opaque and showed signs of slight diphtheritic infiltration. Further down, where the bronchus was passing through completely infiltrated lung-tissue, it was firmly adherent to the wall in such a manner *as to give the bronchus with the clot the appearance of a vein closed by a thrombus.* The wall of the bronchus was here hard and considerably thickened, more so than higher up, where the clot terminated. On detaching the latter, the mucous membrane presented a diphtheritic infiltration, and the yellow masses could not be removed without loss of substance to the mucous membrane. The clot extended into many of the fine ramifications, and in them it was more fluid.

"The anterior edge of the *right* lung, from the first to the fifth rib, reached over to the left border of the sternum. In the upper part of the superior lobe there were numerous, rather deep retractions of the pleura, which on section appeared to be due to shrinking from cicatrisation. In the apex the parenchyma was congested, and contained a great deal of pigment. In its centre there was a small cavity of longitudinal form, with broken-up, cheesy, contents. On a section there were some prominent small nodules, corresponding to sections of bronchi with thickened walls. The middle lobe was filled with air, flabby ; in some places the tissue was fragile and contained much less air. There were in the middle lobe also some nodules, out of which thickened puriform masses could be squeezed, the canal of the bronchus on both sides of the section being then clearly seen. Other apparent tubercles of nearly the size of peas were evidently infiltrations of the tissue. The lower lobe was very oedematous, containing but a moderate amount of blood ; it was everywhere filled with air, but nearly all over in less than normal quantity. Infiltration of the alveoli could not here be clearly made out. No true tubercles have been found in the lungs, or in any other organ."

No doubt can exist in this case, not only from the enormous quantity of the blood expectorated in a few minutes, almost unmixed with air, but above all from its *dark colour*, that the haemorrhage originated in the erosion or bursting of a branch of the *pulmonary artery* running along in the wall of the old cavity. Especially instructive are the changes from red hepa-

tisation to cheesy infiltration and to the formation of cavities, as well as the circumstance that the fresh affection was almost confined to the left lung, where the haemorrhage had evidently taken place, and in which a disintegrating clot of blood was found in the bronchi.

But it is not in all cases that pneumonic processes, set up by blood remaining in the bronchi and alveoli, and the inflammatory product undergoing the cheesy metamorphosis, lead, by a rapid breaking down of the lung-tissue, to death with the symptoms of a "phthisis florida." Even in these cases the cheesy masses may, as has been described above, become more and more inspissated and be encapsulated by proliferating connective tissue, or may, at a later period, be liquefied and reabsorbed, connective tissue filling up the defect. This termination in shrinking and induration, with which the patients may enjoy a relatively good state of general health, shows itself during life by flattening of the affected part of the thorax, the dulness being permanent and the respiratory murmur absent or diminished. This termination may be expected when the pyrexia abates, and the general health, the strength, and the state of nutrition improve; and such a favourable change sometimes occurs even after the worst apprehensions have been entertained.

In one of my cases, after an attack of haemoptysis which was of immediate danger to life, and had been difficult to stop, the whole lower lobe of the left lung became infiltrated, and shrunk afterwards to such an extent that, a few months later, the patient came to consult me on account of the deformity by the "rétréissement" of the thorax, which was caused by the considerable contraction of the diseased lobe of the lung.

As another example of this termination in induration and shrinking, I will give a short extract from a letter of one of my former assistants, who consulted me from Bona, in Algeria. Dr. N. writes, under date of November 29th, 1862:—

One morning, in April of last year, while I was staying at Rotterdam, being otherwise in perfect health, and never having for years suffered, as far as I recollect, from even a slight cough, I was attacked with haemoptysis. At the time a strong wind from the north-east was blowing. In the afternoon I felt somewhat feverish; on the following day I was quite well again, only that I continued spitting blood. On

the third day I returned to Cologne, feeling perfectly well, although the haemoptysis still continued. At Cologne I remained in bed in perfect rest, without any further symptom except three or four bloody sputa. About ten days afterwards, with a general feeling of malaise, rheumatic (?) pains came on in the neck and in the second and third left intercostal space near the sternum. It was difficult and painful for me to lie on the back, and cough with mucous expectoration set in. I had now rather intense pyrexia, began to look unwell, and lost flesh. A physical examination of the chest gave negative results, the "rheumatism" disappeared, the pyrexia ceased, and I felt as if I had passed through an attack of *acute disease*. A constant pain, however, which sometimes increased, from the second to below the third left rib close to the sternum, and a trifling bronchial catarrh, then remained, which did not inconvenience me in the least either day or night, and only caused three to four sputa in the morning. Frequently repeated careful physical examinations gave no results of any importance, either with regard to the heart or the lungs. Only by frequently comparing the respiratory murmur of both sides, Dr. L. found it a little diminished on the left side, but otherwise normal. I recovered just like a healthy man would after an acute illness, and after about six weeks went to Berlin. There a second attack of haemoptysis occurred, which lasted about a fortnight; but this in nowise disturbed my general health or left any catarrh. The physical examination which was made at Berlin by T. and F. gave even now no other result, except slightly diminished, but otherwise normal, respiratory murmur on the left side; there was no dulness, no prolonged expiration, no râle. I remained in Berlin until Easter 1862, in good health; but during a visit at my mother's I had a third attack of haemoptysis, lasting about four days, which, again, did not leave any marks behind. About Whitsuntide I brought up blood for the fourth time, and rather abundantly; and in July I had the fifth and by far the worst attack. This lasted three or four weeks. I continually brought up pure blood, and every day, for eight days, in very considerable quantity. At the end of the second week I became very feeble, and had violent pleuritic pains and dyspnoëa, which compelled me to have recourse to local bleeding. This time, also, I felt just as if I had passed through an acute illness, and enjoying great appetite, I completely recovered by the end of September. But the cough, which remained, was this time much stronger, and the insufficient expansion of the left lung on a more than usually deep inspiration was very perceptible. The pain in the above-mentioned region persisted; the place itself was quite flattened or even concave. Its resistance is increased and the respiratory murmur diminished. Pains, apparently rheumatic, come on even now from time to time in the muscles covering the upper part of the thorax. To the spot on the left of the sternum corresponds a place between the scapula and vertebral column, where I also feel a constant dull pain. I repeat: during the whole time, I have neither lost flesh nor strength, except at the times at which I had pyrexia and severe pain. The cough has diminished, but con-

tinues; the insufficiency of the lung is most perceptible in going up hill.”*

Lastly, it must be mentioned that haemoptysis may not only tend to destructive and indurating pneumonia, but also, at a later period, by cheesy deposits remaining behind, to true *tuberculosis*. I have some very striking instances of this mode of termination among my notes of cases.

To guard against misunderstanding, I must, in conclusion, remark that in the above description I have only drawn attention to that relation of haemoptysis to pulmonary consumption which of late has either not been recognised at all, or has been too little observed; and that I am far from considering this relation to be the only one existing between haemorrhage from the air-passages and pulmonary consumption. On the contrary, I consider an attack of haemoptysis, especially one which occurs from trifling causes, to be of bad omen, even apart from the danger that blood may remain behind in the alveoli, because experience teaches that the morbid friability (haemorrhagic diathesis) of the branches of the bronchial artery, terminating in the bronchial mucous membrane, is, as a rule, associated with a tendency to inflammatory diseases of the pulmonary tissue, whose nutrition depends also upon the bronchial arteries.

I also willingly concede that attacks of bronchial haemorrhage occur even more frequently in the course of pulmonary phthisis, and in all its stages, than they precede it.

I will briefly and concisely sum up my views on the relation of bronchial and pulmonary haemorrhage and pulmonary consumption in the following sentences:—

1. Abundant bronchial haemorrhage occurs more frequently than is commonly admitted in such persons who neither are consumptive at the time of the haemorrhage, nor become so afterwards.

2. In many cases abundant haemorrhages of the bronchial mucous membrane precede the commencement of pulmonary consumption without any causal connection existing between the haemorrhage and the disease of the pulmonary tissue. Here the

* The history of these cases is communicated at length in the thesis of Dr. Bürger: “Ueber das Verhältniss der Bronchial-und Lungenblutungen. Tübingen, 1864.

two processes have their origin in the same source, namely, in the combined disposition of the patient both to bronchial haemorrhage and to pulmonary consumption.

3.* Capillary haemorrhage, either bronchial or pulmonary, does not unfrequently lay the first foundation for pulmonary con-

* Nos. 3 to 6 are inserted, partly in place of the sentences in the original, from a recent paper by Professor Niemeyer in the "Berliner klinische Wochenschrift" (No. 17 seq. 1869), in answer to some objections to his views by Professor Traube, which, with a case on which they were based, had been communicated to that Journal in 1867, by Dr. Fräntzel. A young man, who stated that he had previously been healthy, had suddenly been seized with acute chest-symptoms which, a few days later, were followed by profuse haemoptysis. The case terminated fatally on the thirteenth day, and at the autopsy old indurations, with cavities in both apices, and very extensive fresh lobular infiltrations, in the left lung especially, were found, but nowhere any recent or old clots in the bronchi.

Professor Niemeyer admits that by Traube's case his attention had been called to a relation of haemoptysis to the inflammatory processes leading to phthisis, which he had not mentioned in his clinical lectures, nor in the seventh edition of his text-book of Clinical Medicine. But at the same time he contends that this relation of haemoptysis to pneumonia is far from common, and by no means the rule, as Traube asserts, or that in the numerous cases in which, according to the experience of many centuries, phthisis succeeds a haemoptysis, this phthisis is always, or as a rule, caused by a further extension of that process which is supposed to have already been the cause of the haemoptysis, may this process be called tuberculosis or tuberculous pneumonia. Professor Niemeyer thinks that these rare cases of pneumonia, which are accompanied by such profuse capillary haemorrhage that the haemoptysis seems to be their most distinctive feature, are so dangerous on account of their great liability to undergo the cheesy metamorphosis. This tendency need not be taken as a consequence of some peculiarity of the pneumonic process itself, but is due to the admixture of blood with the products of inflammation, rendering them more difficult to become liquefied and reabsorbed. He further states that he has himself observed several cases in which, as in that adduced by Traube, no coagulated blood was found in the bronchi, but he points out that it was not the blood in the bronchi, but that remaining in, or sucked into, the alveoli, which he had accused of being the cause of inflammation; and he mentions that, according to the testimony of many pathologists, blood is found in the alveoli soon after an attack of haemoptysis. (Compare the interesting cases mentioned in Sir Thomas Watson's "Principles and Practice of Physic," ed. iii. p. 145.)

Evidence confirmatory of Professor Niemeyer's views on the relation of haemoptysis to phthisis has recently been adduced by the *Translator*, by Dr. H. Weber ("Reports of the Clinical Society of London," Vol. II., 1869), and by Dr. G. Johnson ("Brit. Med. Journal," 1870, No. 476.)—C. B.

sumption in persons in whose lungs neither tubercles nor pneumonic deposits previously existed : this is brought about by blood which remained behind in the alveoli, as well as the products of the inflammation which this blood caused, undergoing cheesy metamorphosis.

4. In the same manner do bronchial and pulmonary haemorrhages not unfrequently accelerate the course of an already existing pulmonary consumption. But it is only in rare cases that they occur at a period already when the lung-disease is still latent.

5. In some rare instances the haemoptysis is not the cause but the consequence of the pneumonic processes which, in their further course, lead to consumption. Such cases are easily recognised, because a generally high pyrexia, and other symptoms of inflammation, accompany the onset of the haemoptysis, or even precede it.

6. That portion of the blood which remains behind in the alveoli, and which, together with the pneumonic infiltration, undergoes the cheesy metamorphosis, not unfrequently gives rise to an eruption of miliary tubercles.

SYMPTOMS OF PULMONARY CONSUMPTION.

PULMONARY consumption takes a different aspect according to whether the symptoms are caused from the beginning by pneumonic processes, or whether, in addition to them, tuberculosis is developed at a later period, or, again, whether the disease commences with true tuberculosis. In most cases these three forms can be distinguished from each other almost with certainty.

We intend first to submit the several symptoms on which generally the diagnosis of a pulmonary consumption or, according to the more general mode of speaking, of a "pulmonary tuberculosis," is founded, to a brief critical review from our stand-point, and especially to examine to which of the processes concerned in pulmonary phthisis each one of them belongs. Further on we shall attempt to draw a clear picture of the course of each of the three principal forms of pulmonary consumption.

Increased frequency of respiration occurs in different degrees in all forms of pulmonary phthisis, and has various causes. A moderate increase of the frequency of respiration is not by any means always combined with the troublesome sensation of the respiratory wants being satisfied insufficiently, or only with great exertion—in short, with *dyspnœa*.

It is very common for patients, even with advanced pulmonary phthisis, to feel dyspnœa only at times, and on such occasions as those on which the respiratory wants are increased by an increased tissue-change, while during rest the means at their command are sufficient to convey to the blood the necessary quantity of oxygen, and to discharge the carbonic acid formed in the body, without painful exertion. On the other hand, a considerable and continuous increase in the frequency of respiration, combined with dyspnœa, which, of course, is further exaggerated on the above-named occasions, may be one of the most troublesome symptoms of phthisis.

The increased frequency of respiration, and with it the dyspnœa of phthisical patients, is due partly to the diminution of the respiratory surface, partly to the narrowing of the bronchial tubes by the accompanying catarrh, partly—but only in rare instances—to pain on respiration, and, lastly and above all, to pyrexia.

As a rule, dyspnœa is only present when several of these causes act together at the same time. Thus the respiratory surface may be very much diminished without the patient feeling any dyspnœa, and without the respiration being much accelerated during rest, if at the time neither considerable catarrh, nor pain in respiration, nor pyrexia are present. Many patients whose lungs are condensed and destroyed to such an extent that scarcely half of the pulmonary capillaries have remained for the interchange of gases, have, when sitting still, or lying in bed, even the normal number of respirations. This circumstance is explained by the simple fact that healthy persons need, under ordinary circumstances, expend only a very small portion of the means at their disposal for the respiratory act, in order to satisfy their respiratory wants. Nor must the circumstance be overlooked, that in consolidations and destructions of the lung, those alveoli, which are still present and permeable, become more expanded by the entering air during a respiration of ordinary depth, and that during expiration they give off a correspondingly larger quantity of air than the alveoli of a healthy lung. This increased interchange of air in the still existing alveoli, evidently compensates, at least to a great extent, for the defect caused by the alveoli that have disappeared.

By miliary tubercles, which, as a rule, escape detection by physical examination, a great number of discrete alveoli are filled up, and a great number of bronchioli occluded, so that the respiratory surface is considerably diminished. A high frequency of respiration without dulness on percussion, and without bronchial breathing, is, therefore, one of the most important symptoms of “tubercular” phthisis in the special sense of the word. If a patient who, with consolidation and destruction in his lungs, has hitherto been only slightly, or not at all, short of breath, is observed to get a high frequency of respiration and painful dyspnœa, without these phenomena being explained by an increase in the physical symptoms of consolida-

tion and destruction in the lungs, or by an increase of the pyrexia, etc., then it may be strongly suspected that the existing phthisis has become complicated by tuberculosis. There are cases in which, merely from the discrepancy between the slight extent of the dulness and the high frequency of respiration, we can conclude that this complication has occurred. Only a short time since a stone-mason (Kittel), aged 50, died in the clinique, in whom tubercles were associated with a phthisis that had existed for years with consolidations and destructions of but moderate extent in both lungs. In this case all other symptoms which generally facilitate the diagnosis of tubercles, especially all symptoms on the part of the larynx, the intestines, and the brain, were wanting, and, nevertheless, we could, during life, distinctly diagnose the supervention of tuberculosis, because the patient, although the dulness in the apices of the lungs had not become more extensive, had continually 48 to 54 respirations in the minute, the pulse being 104 to 112, and the temperature varying from 38.2° C. (100.9° F.) to 39° C. (102.2° F.).

We need no further explanations why the frequency of respiration in phthisical patients should become increased by pleuritic pains, as well as by the exacerbation and extension of the accompanying bronchial catarrh, or by complication with pleuritic effusions, hydro- and pneumo-thorax, etc.

Nor is it difficult to understand why pyrexia must increase the frequency of respiration; for pyrexia consists in a morbidly exaggerated production of heat in the body. The want of respiration must increase in pyrexia as in every bodily exertion, because in one, as in the other, more carbonic acid is formed and more oxygen required. If we compare the frequency of respiration in phthisical patients with the height of temperature and the frequency of the pulse, we find that the increased want of respiration must be partly satisfied by a greater depth of each respiration; for equally great variations in the frequency of respiration are scarcely ever found to correspond to the great variations between morning and evening temperatures. The increase of the former in the evening hours amounts but rarely to 6 or 8, in many only 3 to 4, per minute; in some cases there is no increase at all.

Pain in the chest and shoulders is frequently absent throughout the disease. Upon the whole, it accompanies the pneumonic

more frequently than the tubercular processes (compare the case of Dr. N., given above). In cases where, the physical examination not furnishing any marked signs, we are in doubt whether we have to deal with small, discrete pneumonic deposits or with tubercles, pleuritic pains may thus gain importance for diagnosis and prognosis, especially if at the same time sanguinolent sputa are expectorated.

Cough and expectoration precede pulmonary phthisis in numerous cases by a longer or shorter time, and are, in such, due to the *prodromal catarrh*, which, by spreading to the alveoli, leads to catarrhal pneumonia, and, by cheesy metamorphosis and subsequent disintegration of the inflammatory products, to phthisis. It is of the greatest importance to make out in every case whether pyrexia, loss of flesh and paleness of the skin, have appeared only after the patient has for some time had cough and profuse expectoration, or whether those symptoms came on at the same time with the cough and shortness of breath, and before the expectoration became profuse. In the former case, which hitherto has been explained by assuming that pyrexia and loss of flesh have only become associated with the other symptoms at an advanced stage of the tuberculosis,* it is, *ceteris paribus*, more probable that pneumonic processes are present; in the latter, on the contrary, that it is a tubercular phthisis.

The *duration* of prodromal catarrh varies. It may happen that in the second or third week already after its commencement, distinct signs of extension of the process to the alveoli and a phthisis incipiens can be diagnosed. To this class belong not only most of those cases in which phthisis immediately follows upon measles and whooping-cough, but many also of those in which tuberculosis is said to begin with the signs, or under the mask, of a catarrhal fever or an attack of influenza.

On the other hand, it may be that a catarrh has existed for months or years, becoming worse in winter and better in summer, until it spreads at last to the alveoli. In such cases the physician sometimes gives up all anxiety, because, notwithstanding the cough and expectoration, the patient has had no pyrexia,

* According to *Louis*, this is the case in four-fifths of the patients, whilst only in one-fifth pyrexia does begin simultaneously with the cough, etc. (*l. c. p. 209.*)

but has remained strong and in a good state of nutrition. But all at once the scene changes and the signs of consumption appear.

The catarrh which takes this dangerous turn may have originally a different *seat* in a number of given cases. In some of them there is from the beginning a catarrh of the smallest bronchi; but it is also not uncommon for the catarrhal affection to commence in the larynx and in the trachea, and to extend only at a later period to those dangerous parts from which the spreading of the process to the alveoli takes place.

I have quoted in my text-book a passage from *Andral's "Clinique médicale,"* from which it appears that this physician had observed these last-named cases rather frequently, although he has interpreted them in a different way.* A striking instance of this course of the disease was presented by a young peasant (Gerlach) from Bezingen, who, the day after the inspection for military service, awoke perfectly aphonic, and with a hoarse, barking cough, and who referred his illness, of which he had not taken much notice, to the excesses committed on the previous day—in which he was, no doubt, perfectly right. The aphonia disappeared after a few days, the cough lost its hoarse tone, but pyrexia came on, the patient gradually got thin and weak and expectorated a great quantity of sputa, which were partly coloured with blood, and when he came, two months afterwards, to the Hospital, we found a dulness over the right apex reaching down as far as the third rib. At the examination for military service his chest had been found perfectly healthy.

Some means for judging of the probability that a catarrh will lead to pulmonary phthisis are given in the weakness and vulnerability of the patient, which we have previously described. Persons who very frequently suffer from catarrhs, and whose previous catarrhal affections have taken a tedious course, are, upon the whole, more in danger than those in whom this has not been the case. Still, that the latter do not possess any immunity is proved by the case just related of the young peasant, who had been previously a strong and healthy man.

The *sputa* which are expectorated in the course of a common catarrh deserve the most serious consideration. Although we do

* F. v. Niemeyer, Lehrbuch der speciellen Pathologie und Therapie. 6 Aufl., Bd. i. p. 237.

not consider the fine, sharply-marked, deep yellow stripes which appear in the sputa* as a sign of commencing tuberculosis, yet we take them as a sign of a catarrh of the smallest bronchi, with a product very rich in cells; and we know that, when the catarrh occurs in this situation and in this form, we have most to fear its extension to the alveoli. A no less dangerous sign is an intimate admixture of blood with the slimy or muco-purulent sputa, because, as a rule, it indicates the beginning of a pneumonic process.

During the course of the disease itself, cough and expectoration are absent only in rare cases; still, I remember the daughter of an hotel-keeper at Magdeburg, a girl of about eighteen, who, without any cough or expectoration, but with high pyrexia, had become emaciated to an extreme degree, and in whom, to my astonishment, I found the whole upper lobe of the left lung consolidated. Here the pneumonic infiltration had evidently come on without any preceding or simultaneous affection of the bronchial mucous membrane.

It is well known that sometimes cough and expectoration disappear almost completely when, intestinal phthisis being present at the same time, the diarrhoea becomes very abundant: a circumstance which probably has its explanation in this, that in such cases the irritation of the bronchial mucous membrane is lessened as that of the intestine increases.

A tedious and troublesome cough with but little expectoration, which, not containing much formed material, corresponds to the "sputum crudum" of the ancient, and to the "purely mucous sputum" of the more modern authors, is most suspicious. *Ceteris paribus*, there is reason to fear that we have to deal, not with a pneumonic process, but with a *tuberculosis* of the bronchial mucous membrane and of the alveoli; and we can confirm every word of *Canstatt's*, "that it is a very critical symptom, and one which strongly arouses the suspicion of a tuberculosis, when obstinate cough and pyrexia are accompanied by sputa which for a long time keep the crude character, like those of acute bronchitis."[†]

The other peculiarities of cough and expectoration which are mentioned by the authors as being characteristic of tuberculosis,

* Crachats striés de lignes jaunes of *Louis*.

† *Canstatt's specielle Pathologie und Therapie*, dritte gänzlich umgearbeitete Auflage von *Dr. Henoch*. Erlangen, 1855, B. ii. p. 662.

are to us signs of phthisis, but by no means signs of the former. The "sputa globosa fundum potentia" point to nothing but a roundish cavity; the small rice-like bodies in the sputa, if not coming from the tonsils, are due to a diphtheritic destruction in the wall of a bronchus or of a cavity; the sinking of the sputa in water shows that they do not come from the larger bronchi, where a greater quantity of air is generally mixed with them; the discovery of elastic fibres in the sputa is a certain sign of a destructive process, etc. For *tuberculosis* we must look out for other signs. Nay, we may even confidently assert that *a patient who, besides other signs of pulmonary consumption, brings up sputa from which we can conclude an extensive destruction of the lung, is frequently in less danger than a patient who is feverish and becomes pale and thin, and only expectorates viscous and transparent sputa.* Not unfrequently we succeed in prolonging life, in improving the strength, and in increasing by many pounds the weight of patients who have expectorated masses of elastic fibres and are emaciated to the utmost, if only they are under favourable circumstances. My reports of cases contain numerous proofs of the correctness of this assertion.

A hoarse or aphonic cough is one of the most important signs of tubercular phthisis, or rather of the complication of a phthisis which originally consisted in destructive inflammatory processes with tuberculosis. Those very interesting cases in which, in phthisical patients, the alteration of the voice and of the tone of cough is due to a paralysis of the vocal chords caused by pressure of thickened pleura on the recurrent nerve, are so rare that they may almost be neglected, in comparison with those cases in which tubercular ulcers of the mucous membrane are the cause of the symptoms alluded to.

If the cough becomes rough and devoid of tone only at an advanced stage of consumption, this may be taken as a sign of secondary tuberculosis; if, on the contrary, it presents this character from the beginning, and especially at a time at which the sputa are still viscid and transparent, and at which the physical examination of the chest does not reveal any well-marked disease, then a primary tubercular phthisis may be suspected. Not rarely, as we have mentioned before, does the development of miliary tubercles begin in the trachea and in the larynx, spreading only at a later period to the smaller bronchi.

Pyrexia is one of the most constant symptoms of a chronic pneumonia as well as of a tuberculosis.

Ziemssen has shown that in children the extension of the catarrh to the alveoli is always accompanied by a considerable increase of the temperature and of the frequency of the pulse. This is no less true of the commencement of catarrhal pneumonia in adults. The statement of *Louis*, that in the majority (four-fifths) of patients, pyrexia comes on only at a more or less advanced stage of tuberculosis, is explained by the fact that this observer takes his stand-point on *Laënnec's* theory, and therefore refers the prodromal catarrh to an already existing tuberculosis. We have repeatedly drawn attention to the dangerous consequences of this error, and we believe we can confidently say that by accurate observation of the temperature and pulse in every simple catarrh, and by the most careful treatment of every case in which pyrexia comes on in the course of a protracted catarrh, the development and progress of phthisis can very frequently be prevented.

Just as the occurrence of pyrexia is an important symptom of the extension of a catarrh from the bronchi to the alveoli, so its continuance furnishes the most important proof that the pneumonic processes have not yet terminated. The curves, which can be constructed by graphically representing the morning and evening temperatures of phthisical patients, show usually a striking resemblance to each other, and it is possible to conclude from them a pulmonary phthisis almost with the same certainty as we can do in the case of typhoid fever or of acute pneumonia. The difference of morning and evening temperature amounts, as a rule, to 1° to 1.5° C. (1.8° to 3.6° F.); it is rarely less, very often considerably greater; frequently the temperature is found in the morning nearly normal, whilst in the afternoon or evening it rises to 39° C. (102.2° F.), or even higher. This course of the temperature is not, however, as might be supposed, peculiar to all consumptive fevers. If we compare the temperature-curve of a phthisical patient with that of another who is suffering from a protracted superficial suppuration, caries, etc., we find a great difference, especially with regard to the regularity of the morning remissions and of the evening exacerbations. We have not yet arrived at definite conclusions in our investigation of the hectic fever of phthisical patients, especially concerning

the causes by which its regular course is disturbed ; but we can already say this much, that in *tubercular phthisis* in the restricted sense, and when *tuberculosis complicates a destructive pneumonia*, the differences between morning and evening temperature are, as a rule, much smaller. We therefore give, *cæteris paribus*, a more favourable prognosis as long as the pyrexia has the characters of a “ *febris remittens*,” with almost intermittent type, than when it approaches to that of a “ *febris continua*. ” In the former case, we have in numerous instances been successful in moderating, or altogether removing, the fever, and, as a consequence thereof, in considerably improving the strength and nutrition of the patient, whilst in those in whom the pyrexia did not present any morning remissions we cannot boast of any similar results.

When the cheesy masses are eneapsulated, or have afterwards become fluid and reabsorbed, the pyrexia may disappear altogether ; and it frequently happens that patients with considerable cavities in the apices of their lungs are perfectly free from fever. In the cases in which the pneumonia has terminated in induration, the physical signs, and the globular sputa which are expectorated day after day, especially in the morning, are in striking contrast with the subjective feeling of comfort of the patient, his fresh and healthy appearance, and the state of his strength and nutrition. We have explained sufficiently that such persons, although their present illness may have terminated in a relative recovery, are nevertheless in danger of dying from consumption by a relapse of pneumonic processes, or by subsequent tuberculosis ; and we must recommend as a good practice a frequent examination of their weight, and occasionally of their temperature, in order to find out if any of those eventualities may not possibly have occurred.

From these remarks it is evident that the use of the thermometer is at least of as great, if not of even greater, importance for the diagnosis, prognosis and treatment of pulmonary phthisis than of any other disease.

The *impoverishment of the blood and the emaciation*, symptoms to which phthisis owes its name, are placed by us after the pyrexia, because we have no doubt that the pyrexia is their principal cause. Among the proofs for the correctness of the theory that the febrile increase of the heat of the body is due to an increased *production* of heat, the rapid decrease of the weight

of the body, under the influence of a fever of even short duration, is one of the most striking. It is especially in patients with phthisis that it has for years back, in my wards, been made out by numberless examinations with the thermometer and the weighing-machine, that the decrease and increase of the weight of the body are respectively in relation to the height of the fever, or to its disappearance.* There is great plausibility in the supposition that a continuous pyrexia of moderate intensity, especially if the patient keeps in bed, causes less waste than one in which, as in the hectic fever of phthisical patients, the temperature rises daily from a nearly normal temperature to a considerable height. But, though the heat-production and tissue-waste are, as shown by *Immermann*,† very considerable during the rapid rise of temperature, we still hesitate to assume the correctness of that hypothesis. The knowledge that in phthisical patients the strength and the substance of the body are principally consumed by the fever is of the greatest importance for the treatment of pulmonary consumption.

The *physical signs* which hitherto have been considered characteristic of "pulmonary tuberculosis" gain a different meaning for those who have left *Laënnec's* stand-point, and think it necessary, in every case, to make out whether there is present a tuberculosis, or the disintegration of cheesy infiltrations or inflammatory processes which have led to destruction and shrinking of the lung-tissue.

Although the two processes are frequently combined, still it can by no means be asserted that this is always the case; and even where such a combination exists, it is of importance to find out whether one or the other form of nutritive change prevails. For this reason, we shall attempt to submit the physical diagnosis of pulmonary phthisis to a short critical consideration from our point of view.

We know that a man with a *paralytic thorax* and a *phthisical appearance* may have perfectly sound lungs; but, as we have

* Compare the publications by *Liebermeister* in the "Prager Viertel-jahrsschrift," Vols. LXXXV. and LXXXVI. and in the "Deutsches Archiv für Klinische Medicin," Vol. I.

† *De morbis febrilibus quæstiones nonnullæ.* Inaugural Dissertation. Berlin, 1860.

already fully discussed, we presume in him a certain feebleness or vulnerability, in connection with which, catarrhal and other affections easily become protracted and leave cheesy products behind. It is obvious that this circumstance may, in a given case, be of some weight in arriving at a diagnosis. As, however, the disposition to affections with cheesy products includes, to a certain extent, the disposition to tuberculosis, we must, in a patient with a paralytic thorax, especially if an old consolidation can be detected in one or the other apex, consider, *ceteris paribus*, the chance of a tuberculosis having been developed as more probable than in one who does not present those symptoms.

It is generally admitted that the physical signs in the "first stage of pulmonary phthisis" depend only upon the catarrhal swelling of the bronchial mucous membrane, and on the presence of a secretion in the bronchial tubes. According to the prevailing opinion, "as long as the only physical signs are increased or diminished vesicular breathing, interrupted respiratory murmur, prolonged expiration, or rhonchi and râles in the apices, the tubercles, or aggregations of tubercles, have not yet coalesced to extensive peripherally-situated consolidations." But "*as a catarrh which is confined to the apices always (!) depends upon the irritation which tubercles produce in the surrounding parts, it is a certain sign of a commencing pulmonary tuberculosis.*" This assertion stands in direct opposition to the results of pathological investigation. In the apices of the lungs, pneumonic processes of old or recent date, induration and shrinking of the lung-tissue, cavities formed by bronchiectasis, or by the breaking down of cheesy infiltrations, are found much more frequently post-mortem than tubercles. We must not, however, overlook the fact that catarrh of the apices has a peculiar tendency to attack the walls of the bronchi and their lateral and terminal alveoli. As long as the peribronchitic and pneumonic deposits thus originating have not been massed together into extensive consolidations, dulness and bronchial breathing must evidently be absent, and, the symptoms of catarrh excepted, physical examination yields only negative results. Even from our point of view, therefore, a protracted catarrh in the apex of a lung must be considered a grave symptom. The longer it persists, the more ground is there to fear that it will lead, or has already led, to those nutritive changes which most frequently constitute

pulmonary phthisis. That the catarrhal inflammation has really attacked the walls of the bronchi and the pulmonary tissue can, from what we have previously said, be concluded chiefly from the appearance of pyrexia, the impairment of the general health, the loss of flesh, and the pallor of the skin. But even in such cases we have, after careful treatment, so frequently seen a perfect recovery, that we cannot consider the termination of pneumonic processes in cheesy infiltration and destruction of lung-tissue, *i. e.* in phthisis, as the only possible one. We therefore consider the catarrh of the apex neither as a certain sign of a commencing pulmonary *tuberculosis*, nor as a constant fore-runner of pulmonary *phthisis*, but still as a *sign that the patient is in danger of becoming consumptive*.

Dulness on percussion, bronchial breathing and consonant râles in the upper parts of the thorax are, even by the public, held to be pathognomonic of pulmonary tuberculosis or phthisis. The majority of patients, on consulting a new physician, can exactly describe how far the dulness extended at the last examination. As dulness on percussion, or bronchial breathing, are probably never caused by the aggregation of single tubercles or of masses of tubercles only, we may with certainty from those signs conclude the existence of pneumonic processes or their remnants. We do not by any means deny that a patient with dulness and bronchial breathing in the apices of his lungs may not also have tubercles. On the contrary, we shall by-and-by refer to the symptoms from which we may conclude the presence of tubercles in addition to the remnants of inflammatory changes in the lungs; but as a general rule the following holds good:—

If the extension of the dulness and of the bronchial breathing stands in a direct ratio to the progress of the general symptoms of phthisis, the prognosis can be pronounced comparatively more favourable than in those cases in which a patient rapidly emaciates with violent pyrexia, the extension of dulness not being in proportion to the progress of the other symptoms of the disease.

In the former case we have principally to deal with pneumonic processes, in the latter probably with a new growth (tubercle).

A percussion sound which is not exactly dull, but which, *besides being not so full, is somewhat tympanitic*,* is one of the

* The German medical schools, following *Skoda*, employ the term “*tym-*

symptoms which, in a patient with high frequency of respiration, with cough and scanty expectoration, etc., must raise suspicions that, by the presence of tubercles, the quantity of air contained in the lung is diminished and the lung-tissue relaxed. Not long ago a patient (Krauss) was admitted into the Hospital with serious brain-symptoms, in whom the slightly tympanitic percussion-sound, the diminished extent of the respiratory movements of the chest, and the diminished respiratory murmur on the left half of the thorax, were essential symptoms in aid of the diagnosis of tubercular meningitis, to arrive at which was in this case particularly difficult. We concluded, from the symptoms alluded to, that, most probably, there existed an extensive eruption of miliary tubercles in the right lung, and thereby we gained an important guide for the interpretation of the cerebral disease, the correctness of which was afterwards confirmed by the autopsy. We must not, however, omit to add that the percussion-note may assume the same tympanitic character from the presence of small pneumonic deposits.

The flattening of the supra- and infra-clavicular regions on one or both sides, which hitherto has played such an important part among the symptoms attributed to pulmonary tuberculosis, as well as the lower situation of the upper edge of the lung (Seitz), are signs neither of a tuberculosis, nor of a cheesy infiltration, nor of a destruction of lung-tissue, but *always and alone* of a diminution in size of the apex of the lung by induration and shrinking. It is true, the same process which has caused the flattening of the thorax may have led, at the same time, to the formation of cavities by bronchial dilatation, the walls of which may be the seat of a diphtheritic destruction; nor is it improbable that in other places in the lungs cheesy deposits are disintegrating, or that the pulmonary tissue may be studded with tubercles; but it is to the general state of health, to the sputa, or to other physical

panitic" for that quality of percussion-sound which, by its more musical character, admits of distinguishing its pitch, such as the sound produced on percussing a healthy lung, taken out of the thorax, when its tissue, being no longer expanded beyond the equilibrium of its elasticity, collapses to a certain extent; or when, by some cause or other, the lung-tissue can partly collapse within the thorax, or when it loses its elasticity altogether, i.e. becomes relaxed. It corresponds to the terms "tubular" or "amphoric" of English observers.—C. B.

signs that we must look for support in the diagnosis of the one or the other of these nutritive changes, before we can pronounce a patient with flattened supra- or infra-clavicular regions to be suffering from phthisis. When such support is wanting, then the symptom under discussion becomes even an important sign for one of the most favourable terminations, namely, for the comparative cure of that process to which phthisis is mostly due. Certainly such patients do not, for that reason, possess any immunity against phthisis; on the contrary, as is sufficiently evident from what we have said, even if they are not consumptive at the time, they are in much greater danger of becoming so by fresh pneumonic attacks, or by a subsequent tuberculosis, than persons without indurations and shrinking of the apices of their lungs.

The diminution of the respiratory movement in the upper part of the thorax has, if concomitant with flattening of the corresponding area, the same significance that we have attributed to the latter symptom. In such cases the shrunken lung-tissue, which has become impermeable to air, cannot follow the traction of the inspiratory muscles, and the area which remains unexpanded on inspiration retains its usual shape; but if the percussion-note over it be dull, we may conclude an extensive consolidation of the lung-tissue, and most likely a pneumonic infiltration.

Diminished respiratory movements in a place in which, on percussion, there is no dulness, but a normal, or a somewhat altered and tympanitic resonance, create a suspicion of tubercle; but they are no certain sign of their presence, since small, discrete, lobular, pneumonic infiltrations may also, without producing dulness, cause a like diminution of the respiratory movements.

Lastly, the *cavernous sounds*, including the "metamorphous respiration"** (*Seitz*), which is tolerably frequent, are not likely to occur with "tubercular" cavities. I consider it altogether

* Under the name "Metamorphosirendes Athmen," Professor *Seitz* has described a peculiar variety of respiratory murmur which he considers as a certain sign of a cavity. It occurs principally with the inspiration, and consists in a respiratory murmur which suddenly changes its original character. Thus a very sharp respiratory sound, almost resembling a stridor,

doubtful whether *extensive* cavities are ever formed by aggregated tubercles softening, becoming fluid, and being expectorated, or that they become larger by the same process repeating itself over and over again in fresh tubercles deposited in the walls of the primary cavity. There is no doubt that most of the larger cavities in phthisical lungs are partly of bronchiectatic origin, and partly formed by the breaking down of cheesy infiltrations. The well-known and much-dreaded set of symptoms, which is considered to be pathognomonic of bronchiectatic cavities, holds good only in the lower lobes of the lung, because their contents are expectorated with greater difficulty, and therefore easily undergo putrefaction. In bronchiectatic cavities in the apices of the lungs, which are much more common than those in the lower lobes, putrefaction takes place but rarely, as their contents are much more easily expectorated.

When without any flattening of the supra- or infra-clavicular regions, or any abnormal lowering of the upper margin of the lung, cavernous sounds are heard in the apex, we may conclude with probability that the cavities have their origin in destruction of lung-tissue. When, on the contrary, besides cavernous sounds, the signs of induration and shrinking of the apices just mentioned are present, it may be assumed that the cavities are of bronchiectatic origin. It is of by no means rare occurrence for individuals with the last-named symptoms to enjoy for a long time comparatively good health, to retain their whole strength, and rather gain than lose weight, until they are seized by a fresh pneumonic attack, or by a secondary tuberculosis, to which they succumb.

In conclusion, I shall attempt to draw a picture of the most important features of the different forms in which pulmonary consumption usually occurs; and first we shall occupy ourselves with that form in which the symptoms are brought about *alone by pneumonic processes and their termination*.

This form does not infrequently begin with more or less violent symptoms, exactly like an acute disease. It includes

suddenly assumes a soft, blowing character, and this lasts until the end of the inspiration. *Dr. E. Seitz, die Auscultation u. Percussion der Respirations-organe.* Erlangen, 1860, p. 138. *Dr. E. Seitz, über ein neues Höhlengeräusch.* Deutsches Archiv für Klinische Medicin, Vol. I., 1865, p. 292.—C. B.

those cases in which a common acute pneumonia, instead of terminating in resolution, leads to cheesy infiltration and to phthisis; those in which intense and wide-spread pneumonic processes have been set up by the blood which, during an attack of haemoptysis, filled the bronchi and alveoli, and coagulated in them; and lastly, those in which an acute bronchial catarrh extends to the alveoli of larger portions of the lung.

The termination of acute pneumonia in cheesy infiltration and phthisis—which, however, is of rare occurrence—must be apprehended if the pyrexia does not cease at the end of the first or in the beginning of the second week of the illness; if in the evening hours the fever rises considerably, a remission, accompanied by profuse perspiration, taking place towards morning; if the dulness over the chest persists; if within the area of that dulness moist crepitant râles are heard for some time; and if larger quantities of purulent sputa are expectorated. The discovery of elastic fibres in the sputa, and the existence of cavernous sounds, leave no doubt that the cheesy tissue is breaking down. The majority of patients die after a few weeks, consumed by the violent fever. Much more rarely a favourable turn takes place at a time when the worst fears have already been entertained: the expectoration diminishes, the patients commence slowly to gain strength, but the dulness persists, the chest gradually flattens in the corresponding area, and, after some time, distinct signs of induration and shrinking of the diseased part of the lung, and frequently also of bronchiectatic cavities in it, reveal themselves.

A very similar course is taken by some of those pneumonic processes which immediately follow an attack of haemoptysis or pneumorrhagia, and which, according to our view, are caused by the blood which has been poured into, and has coagulated in, the bronchi and alveoli. The more extensive the dulness which is developed in the course of a haemoptysis, the longer it persists, and the more pronounced the pleuritic symptoms, the more violent the pyrexia, and the longer it continues, the more reason is there to fear that the retained blood and the inflamed lung-tissue have undergone a cheesy metamorphosis, and that extensive destruction of the lungs is imminent. But that, even in such cases, the cheesy masses may in course of time become fluid and be reabsorbed or encapsulated, and that by an abundant growth

of connective tissue, induration and shrinking of the diseased part of the lung may be induced, is proved by the examples related above.

The spreading of an acute catarrh to numerous alveoli is also sometimes accompanied by very serious symptoms, especially by such intense pyrexia and so rapid a loss of strength and flesh that the diagnosis may at first be difficult. It is pardonable in such cases, for a time, and until the case becomes clearer, to consider the catarrh and the violent fever as the consequence of some infection, or of an acute development of tubercles in the lungs. But usually the case soon becomes clearer. Some sputa show, by intimate admixture of blood, the pathognomonic colouring of pneumonic sputa; more or less violent or extended pleuritic pains arise; the percussion-note in the upper parts of the chest loses its full quality and becomes tympanitic, and even dull, when the originally lobular foci coalesce into extensive consolidations; under the same conditions the râles, which formerly had no definite character, become consonant, the respiratory murmur bronchial, etc.

It sometimes happens that these catarrhal infiltrations of an acute origin become completely resolved; but much more frequently the infiltrated tissue undergoes cheesy metamorphosis, and in a short time disintegrates. The majority of cases of galloping consumption, in which extensive destruction of the lungs takes place within a few weeks, and where the patients rapidly emaciate and die under the most intense pyrexia, originate in the spreading of an acute catarrh to the alveoli of larger portions of the lungs, and may be designated as the termination of an acute, or sub-acute, catarrhal pneumonia in "*phthisis florida*." If the process under discussion extends over an entire lobe, a gradual reabsorption, or a sequestration of the cheesy masses, and induration and shrinking of the diseased parts, rarely takes place; yet we have had for years an opportunity of observing, in the Hospital, a striking example of this course of the disease in a sword-cutler named Schmidt, 24 years of age. In this man the whole upper lobe of the left lung is considerably contracted, the heart lies in a large area immediately behind the chest-walls, its apex is displaced to the left, the right lung is the seat of considerable compensating emphysema, and reaches two finger-breadths beyond the left margin of the sternum.

When the acute catarrhal pneumonia leaves cheesy infiltrations of inconsiderable extent, the termination in induration and shrinking is much more frequent.

The sinking-in of the supra- and infra-clavicular regions, and the lower situation of the upper margins of the lungs, can in many individuals be referred to an attack of acute catarrhal pneumonia, which became protracted, and terminated in the manner just described.

Not infrequently even we have an opportunity of observing patients who, having, after shorter or longer intervals, been seized again and again by such attacks, get safely through them, but in whom, after an attack, an extension of the dulness, and of the area within which the chest is flattened, remains behind, until at last they are carried away by a pneumonic process which takes a less favourable turn, or by tuberculosis.

In contrast to the cases hitherto considered, the extension of a catarrh from the bronchi to the alveoli may take place without any serious symptoms, and even in quite a latent manner. We very frequently find in the apices of the lungs contracted cicatrices, encapsulated cheesy deposits, callous indurations, as remnants of pneumonic processes which entirely escaped observation. In the same manner we get in many persons a flattening of the supra- or infra-clavicular region, and an abnormal lowness of the upper margin of the lung as notable by percussion, without being able to make out at what time and with what symptoms the pneumonia occurred which has led to induration and shrinking of the apex of the lung.

But whenever the process becomes at all extensive, even *chronic* catarrhal pneumonia seems always to be accompanied by pyrexia. This lingering fever is, however, as a rule, overlooked or mistaken by the patients, and sometimes also for a time by the physician. For the more palpable subjective febrile symptoms, such as shivering, a feeling of heat, increased thirst, etc., are in such cases insignificant, and are obscured by the results of the increased waste of tissues, and of the injurious influence which the pyrexia has on the appetite, the digestion, blood-formation, and nutrition.

When a patient with a chronic bronchial catarrh, by which hitherto his general health and his strength have not been impaired, loses his appetite, becomes pale and thin, and notices a

diminution of his strength, there is reason to suspect that the disease has spread to the alveoli, and it is urgently desirable to make out, by accurate observations of the temperature of the body, and by repeated physical examination of the chest, whether there be any pyrexia, or whether consolidation can be detected in the lungs. The chronic form of catarrhal pneumonia shows a marked tendency, under favourable external circumstances, to terminate in induration and contraction, but no less, under the influence of injurious conditions, to frequent relapses. This is the explanation of the fact that numerous patients, although they have extensive callous indurations and bronchiectatic cavities in the apices of their lungs, enjoy tolerable health, and gain strength and weight during the summer months, but in winter, especially if they be obliged to work, and to expose themselves to catching cold, become feverish, weak, thin and pale, and acquire fresh consolidations in their lungs. This change repeats itself in many cases for several years. Such patients form a large contingent to the hospitals, where, unless they present particularly rare physical signs, they are mostly unwelcome guests, since "chronic pulmonary tuberculosis" (!) is generally considered to be a disease of but little interest. The great influence which therapeutic, especially hygienic, measures have, particularly on this, by far the most frequent form of phthisis, is, from our stand-point, thoroughly intelligible, and is, as it were, a proof of the correctness of our views.

The possibility that, in *the course of a pulmonary phthisis caused by pneumonic processes, a tuberculosis may be developed*, must be constantly kept in view. We may here recall the statement which we have made above, "that the greatest danger to most phthisical patients is the development of tubercles." This may occur at any stage; and even when a pulmonary phthisis takes the most favourable course, we must not be too confident and give, unconditionally, a good prognosis.

The development of tubercles in phthisical lungs may take place in so latent a manner that it cannot be diagnosed, or, at all events, not with absolute certainty. In many other cases, on the contrary, especially in those in which the lungs become the seat of very numerous tubercles, and in which the tuberculosis extends to other organs also, the diagnosis does not present any difficulty. When we find a patient who is suffering

from pulmonary phthisis becoming very short of breath, without any extension of the dulness over his thorax; when the pyrexia continues, in spite of the most careful treatment, and when the remittent fever becomes a continuous one; when diarrhoea takes the place of a tendency to constipation which may have existed before; when to the other symptoms hoarseness or aphonia, or the well-known signs of an affection of the membranes at the base of the brain, supervene, then we may assume with perfect confidence that in the case before us a tuberculosis has associated itself with the phthisis. The cerebral symptoms in the young, in whom tuberculosis has a special tendency to attack the membranes of the brain, and in older persons the symptoms on the part of the intestines and the larynx, furnish the chief points for the diagnosis.

That form, lastly, under which a *primary tubercular phthisis* commences and takes its course, is essentially different from those hitherto considered, and is mostly so characteristic that the diagnosis of this not very frequent form of phthisis is, as a rule, easy. In the first place the prodromal catarrh is absent. The pyrexia and the "consumption" do not begin only at the time when the patients expectorate profuse muco-purulent sputa, but, on the contrary, the eruption of tubercles, especially if very intense, occurs with a considerable elevation of temperature, and with a rapid consumption of the body by the high pyrexia. If we hear from a patient that he has only commenced to cough and to expectorate, after having for weeks past rapidly become feeble, pale and thin, we must suspect him to suffer from a tubercular phthisis. This suspicion gains further ground if the patient is unusually short-breathed, and if the physical examination of the chest yields at first negative results. Later on the percussion-sound may, by subsequent pneumonic processes, become dull, the respiratory murmur bronchial, the râles consonant, but in some cases only do the infiltrations of the lungs become so extensive as in those forms of pulmonary phthisis previously considered. At an early period the tone of the voice and of the cough generally becomes hoarse, and when the tubercular affection of the larynx is considerable and spreads rapidly, the well-known painful symptoms of laryngeal phthisis come on. The signs of intestinal tuberculosis, and of intestinal tubercular phthisis, are not, as a rule, long in making their appearance.

The consumption is increased by abundant diarrhœa, the abdomen becomes tender on pressure, etc. The disease rarely lasts more than a few months. Most of the patients succumb even at an earlier period.

It has not been my intention to give an exhaustive description of the course of the preceding forms of pulmonary phthisis, or to allude to the innumerable modifications which have their origin in individual peculiarities, in the frequent changes of acute and chronic processes, in the various intercurrent affections and complications, and in other circumstances. Nevertheless, it will not be difficult to range under one or other of the forms specified most of the cases of pulmonary phthisis which we observe, or of which we read good and complete descriptions.

TREATMENT OF PULMONARY CONSUMPTION.

THE *treatment* of pulmonary phthisis has gained much firmer ground by the just appreciation of the fact that this disease consists, as a rule, in pneumonic processes, and in some cases only in a new growth (tubercle). Although we do not owe to this knowledge the introduction of new remedies "which are a certain cure for phthisis," yet we have been enabled by it to establish more exact indications for those in general use, and to obtain in many cases, by their consistent employment, better results than were obtained at a time when pulmonary consumption was considered as incurable as a carcinomatous disease, and was treated accordingly.*

In order to *prevent* pulmonary consumption, we have first of all the duty of placing, if possible, those in whom we observe signs of a weak constitution, especially if there exist already proofs of a great vulnerability and a tendency to diseases with the formation of cheesy products, under such influences as we hope may strengthen their constitution and extinguish that morbid tendency.

Without entering into a full discussion of the dietetic measures which are indicated under such circumstances, I will only call attention to a very common and palpable error. Cautious mothers, especially those who have already lost children from croup, capillary bronchitis, etc., and who, from the repeated illness of their remaining children, are anxious about them, are in the

* With regard to the curability also of phthisis, even to this day most physicians hold Laënnec's views :—"Presque tous les hommes de l'art, qui sont au courant des progrès récents de l'anatomie pathologique, pensent au contraire aujourd'hui que l'affection tuberculeuse est, comme les affections cancéreuses, absolument incurable parceque la nature ne fait que des efforts contraires à la guérison et que l'art n'en peut faire que d'inutiles. Laënnec, l. c. ii. 58).

habit, in order to save them from colds, of restricting the enjoyment of the open air to a most injurious degree—and this is often done with the concurrence even of their physicians. Although the injurious influence which continuous indoor life has on the system cannot yet be thoroughly explained, still the fact is sufficiently established that scrofulosis as well as pulmonary consumption are much more frequent in asylums for foundlings and orphans, in reformatories and prisons, and among artisans who have to work the whole day in closed rooms, than in those who are much in the open air. The objection that the frequency of scrofulosis and pulmonary consumption in such places is caused by other agencies than the want of fresh air, and especially by bad and insufficient food, does not stand the test of experience. The inhabitants of many poor villages are, on an average, much worse off with regard to food, and are exposed to more numerous causes of disease, than those who are detained in prisons and reformatories, without being, in the same degree as the latter, liable to these diseases. *Too little regard has hitherto been paid, in practice, to these striking facts.* Numberless delicate and weakly children with protracted catarrhs, chronic eruptions on the skin, swelled lymphatic glands, etc., are every year sent to the sea-side or a salt-spring for a few weeks, but during the rest of the year they are allowed to sit for six hours every day in school, and do their tasks at home besides, to have private lessons, to play on the piano, etc.—provided only they take a good deal of cod-liver oil, as if cod-liver oil could take the place of fresh air. With this prejudice among physicians, which is certainly not exaggerated, it is no wonder that many anxious mothers do not scruple to keep their children altogether indoors during winter. Only where the injurious consequences of such a measure are particularly visible, on account of the length of the winter—as, for instance, in Russia—it is a pretty general custom to send to the South, during the winter months, not only invalids who are already consumptive, but also those in whom a consumptive tendency is suspected. It would be desirable were a similar practice introduced among us also: the school hours should at once be reduced as soon as their injurious influence becomes apparent, and, wherever the circumstances allow it, weak and sickly children who have a tendency to catch colds, or who are scrofulous, should, until their health has become more

confirmed, be sent, during the northerly winter, to countries where they can every day run about in the open air. I must confess that I have met with obstinate opposition when I made such proposals, which in our parts of Europe are almost unheard-of; but in a series of cases in which I succeeded in having the schooling altogether discontinued for a time, and in making the children pass the greater part of the day in the open air, I have obtained results by which I was myself surprised, and which forced the conviction upon the parents that the success fully outweighed the heavy sacrifice which they had made.

As soon as, in spite of the assurances to the contrary of *Laënnec*, and of celebrated authorities of the most recent time, we are convinced that a protracted bronchial catarrh frequently leads to consumption, it becomes obvious that the prophylaxis of pulmonary phthisis, besides the avoidance of influences on which the frequency of the disease depends in orphan asylums, prisons, etc., requires also measures by which—especially if a tendency to phthisis be present—bronchial catarrhs may be, if possible, prevented, and whereby even mild attacks of bronchitis may be rapidly and completely removed. As an example that the precautions indicated from the former as well as from the latter point of view may be very well combined, we will only allude to the fact that almost all sailors, and many other practical people who must expose themselves to wind and weather, wear flannel shirts.

When an acute catarrh extends from the bronchi to the alveoli, it is often of momentous influence for the course and the termination of the disease whether the physician who attends the case considers the catarrhal symptoms in the apices, the pyrexia, the severe disturbance of the general health, the rapid loss of strength, etc., as certain signs of a “tuberculosis,” or whether he thinks that this set of symptoms may also depend upon a genuine catarrh and upon lobular pneumonia.

In the first case, strict measures are, as a rule, considered useless, and their enforcement unnecessary. The patient is allowed to follow his employment until the rising pyrexia and the increasing debility force him to remain at home, or until haemoptysis, pleuritic pains, the appearance of dulness over the chest urgently demand that the supposed “secondary” pneu-

monic and pleuritic processes be submitted at least to a symptomatic treatment. It will not be said that I exaggerate;—let us be sincere! Is not this "*laisser aller*" practice, founded on reasoning, of everyday occurrence with regard to the affections under discussion? It is seldom that a medical man reproaches himself for having, by his carelessness, been guilty of the development of a phthisis florida; so firmly rooted is the conviction that in this form of pulmonary phthisis also, the cause of the disease is an infiltration of the lung with a new growth, against which treatment is completely powerless.

It is true, even in case the physician should have fully recognised the nature of the disease, he will not be able to cut it short at once; but still he has every reason to give the strictest orders, he must do everything in his power to protect the patient from injurious influences, and to place him under such conditions as may be expected to put a stop to the further extension of the pneumonic process, and prevent its termination in cheesy infiltration and disintegration of the lung-tissue. The results following such measures, by which alone regard is had to the present state of pathology, and by which the valuable labours of *Virchow*, *Maier*,* *Colberg*,† and others receive their practical application, confirm in a striking manner the correctness of the views brought forward by those observers. Let any one make the experiment of having patients with the supposed signs of a commencing pulmonary tuberculosis strictly confined to their beds for a time, forbidding them all unnecessary talking and coughing, covering their chest with poultices, ordering a local abstraction of blood by leeches or cupping on the first appearance, and on every recurrence, of pleuritic pains, and he will soon satisfy himself that many a patient gets well who would formerly have been assumed to be the subject of tuberculosis, and therefore incurable. I am fully convinced, from my experience of the last few years, that in former times I have lost many a patient from galloping consumption only because I considered him lost from the very first, and because I did not treat him as a patient who is suffering from pneumonia, but as one in whose lungs a new growth has

* Mittheilungen aus dem pathologischen Institut in Freiburg, von Rud.
Maier.

† Deutsches Archiv für Klinische Medicin, Vol. II., 4, p. 468.

been developed, the extension and further changes of which it was beyond medical art to prevent.

The treatment just alluded to must also be urgently recommended for *the exacerbations which occur in the course of a chronic pulmonary consumption with symptoms of more intense pyrexia*. We can prove, by a great number of recorded cases, how great, even in such conditions, is the influence of a treatment which takes into account the inflammatory nature of the lung-disease. In the clinique at Tübingen, which principally gets its patients from the population of the neighbouring villages, it is common for phthisical patients to be, during several years, repeatedly admitted for a short time. In these cases it is of quite frequent occurrence that, in the few weeks during which they stay in the Hospital and are treated in the above manner, the fever, the debility, and the emaciation which, on their admission, have often reached such a degree that the worst might have been anticipated, completely disappear, and that the patients themselves ask to be discharged, in order to return to their occupations. Often enough, it is true, a short time only elapses before they return for re-admission with intense pyrexia, great debility, and a loss in weight amounting to 8 or 10 pounds. But besides the experience gained in hospitals, that also of private practice has convinced me of the great advantage derived from acknowledging that the "hectic" fever of phthisical patients is a symptom of a chronic inflammation of the lung, and from taking its intensity, in the same way as we do with the height of fever in acute pneumonia, as a measure for the intensity and for the further spreading of the pneumonic processes.—It is a fact of everyday occurrence, that consumptive patients in the better classes, *even when they have considerable pyrexia in the evening hours*, are not advised, with sufficient urgency, by their physicians to give up their occupations, to discontinue their going to the office, and to keep away from over-heated and smoke-filled clubs and coffee-houses. Often enough, the extension of chronic inflammatory processes, and their termination in breaking down, are essentially furthered by those very influences to which the patients expose themselves on those occasions, and which are most injurious to the diseased lungs; whilst by carefully avoiding them, by strict rest, an equable temperature, the application of poultices, etc., the disease is not unfrequently

arrested and an improvement obtained in a surprisingly short time. I observed the following striking case at Greifswald :—

Mr. V., a joiner and furniture-dealer, in good circumstances, an active business-man, but addicted to the pleasures of a good table and of jovial society, had for years been suffering from a chronic pulmonary phthisis with large cavities in both apices. During the summer months he used generally to be in a tolerable state of health, and regularly took a course of mineral waters, most frequently at Ems. During winter he got worse and complained much, but still did not keep away from his warehouse, nor discontinue the daily visit to his club. In the winter of 1858 I had lost sight of him, as he had applied to another physician, because I had refused to comply with his wishes and visit him regularly. One day he sent for me; I was surprised by his appearance: he was emaciated in the extreme, and told me he had lost fifteen pounds in weight since the autumn. In the evening his pulse numbered 110 to 120, his temperature over 39° C. (102·2° F.); but even in this state he had daily attended at his office, and had also daily gone to his club. He had taken, as was shown by his prescriptions, large quantities of medicine during the last few months, so I ordered that, first of all, every medicine should be discontinued, but that the patient should keep to his bed for a week, that he should speak as little as possible, that he should suppress the inclination to cough, and cover his chest with a poultice. Mr. V. became very desponding on hearing this advice. He declared, with loud lamentations, he was sure he should never leave his bed again, and should succumb to his illness in a short time. But even after the lapse of a week the pyrexia was markedly diminished, the rather profuse night-sweats had disappeared, the appetite had returned. Mr. V. got rapidly better, and lived three years longer.

Should the desired effect not be obtained by keeping all injurious influences away from the inflamed lung, by a moderate diaphoresis, by the application of poultices to the chest, etc., and should the pyrexia remain at all considerable, no time ought to be lost in using *anti-pyretic remedies*. These remedies have just as little direct influence on the chronic pneumonia of consumptive patients as they have on acute pneumonia, on continued fever, and other diseases, against which they are much recommended and employed, although frequently without a clear idea of what they can effect. The fact being once recognised, that the loss of mucus and cells, which in simple bronchial catarrhs is often much more profuse, has only a small share in the wasting of consumptive patients, and that the *pyrexia* is their worst enemy, it becomes a matter of course to attempt by every

means to combat this enemy. Among the remedies which are in many cases successful in reducing the increased production of heat and the temperature of the body, although the original disease continues, digitalis and quinine justly enjoy a great reputation.

We employ them very frequently in phthisical patients, if we have not succeeded in subduing the pyrexia by the means above alluded to; and pills which contain one grain of quinine, half a grain of digitalis and a quarter of a grain of opium, and of which one is taken four times a day, are one of the most frequent prescriptions of our clinique.

At times when I am much consulted by phthisical patients, I often prescribe these pills three or four times on the same day. In the Hospital we discontinue the pills as soon as a marked decrease of the temperature and of the frequency of the pulse is noticeable, and we return to their use as soon as their effect has again disappeared. In my consulting practice I have repeatedly seen that patients quickly learn to judge by their own experience when it is time to discontinue the pills and when to return to their use.

We pass immediately from the consideration of the anti-pyretic treatment of phthisis to that of the dietetic rules to be given to the patients, and we do this for the same reason as, above, among the symptoms we considered the wasting immediately after the pyrexia. A man who has pyrexia which rapidly consumes his body, requires much more urgently a supply of fresh nutritive material than one who has no pyrexia. A patient suffering from phthisis has sometimes pyrexia for months, so that the danger of being consumed by the fever is much greater for him than for a patient who is affected with some acute disease of short duration. It results from this, that we have particular reasons for supplying phthisical patients with abundant and appropriate food.

It has been frequently asserted that food increases the pyrexia; but this is far from being proved, and—not to speak of the practice which is usual in England—even in our country the patients are only placed on the so-called “fever-diet,” *i. e.* all nutritive food is kept away from them, till such time only as it becomes clear that danger arises therefrom. As soon as this becomes apparent, that alleged rule of experience is completely

set aside by those who have charge of the patient, or, rather, they act in direct opposition to it.

With regard to the selection of the appropriate food for phthisical patients, the ancient precepts, which are partly inherited from rude experience, completely agree with the physiological laws of nutrition. All articles of food which are chiefly recommended for phthisical patients, contain large quantities of fat or fat-forming material, and comparatively few nitrogenous substances. With this selection agrees the fact which has been experimentally discovered, that when nitrogenous substances are abundantly taken, the production of urea, viz. the transformation of nitrogenous substances, is increased, but that, when fat and fat-forming material are liberally supplied at the same time, the change and waste of those organs and tissues which are by far the most important for the system is, on the contrary, diminished. For this reason, a free use of milk, to which children owe the round forms of their limbs, and which too stout persons justly avoid, cannot be too warmly recommended. But it is quite superfluous and wrong to take the cheese away from the milk and to give the latter as whey, unless it be—as, however, certainly but very seldom occurs—that whey agrees, whereas milk disagrees, with the patient. When in numerous cases I recommend to my patients to take, three times a day, half a pint of milk “from the cow,” I have no other purpose in doing so than to prevent its being skimmed—and this, I need hardly say, is impossible immediately after the milking.

Cod-liver oil I esteem very highly, but it can be completely replaced by the much less nauseous and, for the stomach, less troublesome malt-extracts which, instead of fat, contain fat-forming substances in a form to be very easily assimilated.

Grapes also may be recommended instead of the cod-liver oil, although, strange to say, they are reputed with many physicians to purge and to “dissolve,” for which qualities they are not seldom ordered after a course of Marienbad or Karlsbad waters. By taking three to four pounds daily of the sweet grapes at Vevey, Montreux, etc., almost all persons will increase in bulk and weight within a few weeks, and if the intestines previously have been sound, diarrhoea occurs but very seldom.

For the rest, that form of phthisis which consists in pneumonic processes *must be treated according to the same principles*

which hold good for the treatment of catarrhal inflammations confined to the bronchial mucous membrane. It would lead us beyond our task to enter more minutely into the questions under what conditions the administration of so-called expectorant remedies is indicated; under what conditions resinous and balsamic substances or narcotics are appropriate; in what cases the inhalation of pulverised liquids should be used, etc.

In our opinion, the use of alkaline muriatic springs has, in numerous patients, a really curative influence, not only on the prodromal catarrh, but also on the phthisis itself—an influence which, however, is completely denied by sceptical physicians and by those who are biased by the old doctrine. That the use of the waters of Ems, Obersalzbrunn, etc., is contra-indicated by the presence of pyrexia, belongs, like so many other things, to the category of those facts of which a wrong explanation has been given. It is not the mineral waters, but the journeys to those watering-places, and the usual promenades there, which disagree with the patients. A patient with pyrexia of any considerable degree is, as we have shown, to be confined to his room, or, rather, to his bed.

But, just as in the treatment of a simple catarrh it is of much greater importance to keep off fresh injurious influences from the patient than to administer drugs, so the same holds good with regard to phthisis which has its foundation in catarrhal pneumonia. To most phthisical patients the advice would have to be given to pass the greater part of a northerly winter in their room, which ought to be kept at the most equable temperature possible, if the very important objections which we have fully considered above were not opposed to such a measure. The difficulty of injuring the patient in one way or the other is evaded by making him escape the northerly winter until his health has become stronger, viz. by sending him, during winter, to places in which he can spend the greater part of the day in the open air, without risk of catching cold and without breathing a bleak and cold air. This, according to our opinion, is the only proper meaning of ordering a *change of climate* to a patient. We must not neglect to induce the patients in question, if their means at all allow it, to make this sacrifice; but, at the same time, we ought to tell them the plain truth, in order that they may not be under the impression that the air in the places to which they are sent contains

peculiar curative substances for their diseased lungs. Only when the patients themselves know what is the real object of their going to those places, will they live at Nice, Mentone, Pau, Pisa, as well as in Algeria, at Cairo, and in Madeira, with those precautions which alone make success possible. Otherwise it would often have been better for them if they had remained at home.

In acting on these principles, it is a matter of course that the patients be sent in the autumn, before the cold season commences, to Soden, Badenweiler, Wiesbaden, and especially to the Lake of Geneva, where they may, at the same time, take grapes, and where they are as well until the commencement of winter as with us in summer. It is only very intelligent and prudent patients, of whom we may be certain that they will remain at home on cold days, that may be allowed to pass the winter at Nizza, Mentone, Pisa, or Pau, etc. But it is always better to send people whose means are sufficient to Algeria, Cairo, or Madeira during winter. The advantages of one place over another are as yet by no means sufficiently established, and the indications which have been formed as to the choice of Madcira, Cairo, or Algeria, according to the different individual peculiarities or the different course of the disease, are so loose and uncertain that they are not of much value. The chief point, under all circumstances, is *that the patients, wherever they may be, live prudently and be under the care of an intelligent and firm physician.*

Against that form of phthisis which consists in a *primary tuberculosis*, as well as against the *tuberculosis which has been developed in the course of phthisis*, treatment is indeed impotent, and we are simply limited to the palliation of the most troublesome symptoms. It is strange that anti-pyretic remedies have comparatively little effect on the fever which is due to true tubercle. If we have come to the conviction that a consumptive patient has tubercles, we ought not to send him to Nice, Cairo, etc., but ought to let him live his last days among his friends and die in his own house. This applies, however, only to those cases in which the diagnosis of tubercles is beyond any doubt.

L A W S

OF

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VI.—The Officers of the Society shall be elected by ballot at the General Anniversary Meeting of the Society. Ballotting lists of Officers proposed by the Council, with blank places for such alterations as any Member may wish to make, shall be laid on the Society's table for the use of Members.

VII.—The President, Vice-Presidents, and Council shall be eligible for re-election, except that of the Vice-Presidents four, and of the Council eight, shall retire every year.

VIII.—The Council shall appoint Local Honorary Secretaries wherever they shall see fit.

IX.—The business of the President shall be to preside at the Annual and Extraordinary Meetings of the Society: in his absence one of the Vice-Presidents, or the Treasurer, or any Member of the Council chosen by the Members present, shall take the chair.

X.—The Treasurer, or some person appointed by him, shall receive all moneys due to the Society.

XI.—The money in the hands of the Treasurer, which shall not be immediately required for the uses of the Society, shall be vested in such speedily available securities as shall be approved of by the Council.

XII.—The Council shall select the Works to be published by the Society, and shall make all arrangements, pecuniary or otherwise, in regard to their publication. In the event of any Member of the Council being appointed to edit any work for the Society, for which he is to receive pecuniary remuneration, he shall immediately cease to be a Member of the Council, and shall not be eligible for re-election till after the publication of the Work.

XIII.—The Council shall lay before the Members at each Anniversary Meeting a report of their proceedings during the past year, and also an account of the receipts and expenditure of the Society; and shall further cause to be printed, and circulated among the Members, an abstract of such report and accounts immediately after such Anniversary Meeting.

XIV.—The annual accounts of the receipts and expenditure of the Society shall be audited by a committee of three Members, selected at the preceding Anniversary Meeting from among the Members at large.

XV.—The Secretary shall have the management of the general correspondence of the Society, and of such other business as may arise in carrying out its objects.

XVI.—The Local Secretaries shall further the objects of the Society in their respective districts, and shall be in com-

munication with the Metropolitan Secretary.

XVII.—The Anniversary Meeting shall be held in the same town as, and at the time of, the Annual Meeting of the British Medical Association, notice of it having been given to all Members at least a week before the day fixed on.

XVIII.—The Members generally shall be invited and encouraged to propose Works, &c., and to make any suggestions to the Council they may think likely to be useful.

XIX.—The Works of the Society shall be printed for the Members only.

XX.—No alteration in the Laws of the Society shall be made, except at a General Meeting. Notice of the alteration to be proposed must also have been laid before the Council at least a month previously.

XXI.—The Council shall have power to call a General Meeting of the Members at any time, and shall also be required to do so within three weeks, upon receiving a requisition in writing to that effect from not less than twenty Members of the Society.

XXII.—All special General Meetings of the Society shall be held at such place as the Council may appoint.

XXIII.—The Council shall meet at least once in two months, unless by special resolution to the contrary.

REPORT

*Presented to the Eleventh Annual Meeting, held at
Leeds, July, 1869.*

The Council has the pleasure to report that the conclusion of the Society's eleventh year finds it in its usual condition of prosperity. The income for 1868 was nearly equal of that for 1867, and exceeded that for 1866, amounting in total to £2,951. During the year, including the Catalogue of Portraits of Skin Diseases, five volumes were issued, thus making a total of forty volumes in ten years. Under the term "volume" are here comprised the Fasciculi of the Atlas of Skin Diseases, the publication of which is much more expensive than that of an ordinary printed book. Although during each of the last two years the expenditure has somewhat exceeded the income, and thus the balance in hand has been reduced, yet the financial state of the Society is such that the Council feels no anxiety as to its being able, in the future, to continue the annual average of four volumes. The balance now in hand amounts to nearly £1,000, and in addition to the usual income from annual subscriptions, the Society possesses a valuable property in stock in hand.

The demand for back volumes is still steady. Ten complete sets were required during the year.

The Council has recently adopted for translation several important works, which will, it believes, be acceptable to the profession. Amongst these are :

PROFESSOR NIEMEYER'S LECTURES ON PHTHISIS.

WUNDERLICH'S TREATISE ON TEMPERATURE IN DISEASE (being a complete guide to the use of the Thermometer in Medical Practice).

STRICKER'S MANUAL OF HUMAN AND COMPARATIVE HISTOLOGY. This work will be a complete treatise on the Microscopic Anatomy of the tissues, and will be produced (under the Editorship of Dr. Stricker) by a staff of authors, which includes most of the distinguished histologists of Germany. Only the first part is as yet published. Its translation has been entrusted by the Council to Mr. Henry Power, the Editor of the last edition of Carpenter's Physiology. The first volume will probably be ready early next year, and the issue of the English edition will be almost simultaneous with that of the original.

The Council has also under consideration several other important works.

During the present year three volumes have already been issued, and the series will be completed by the Ninth Fasciculus of the Atlas of Skin Plates.

The third volume of Troussseau's Clinical Medicine will be ready early in 1870.

LIST OF OFFICERS FOR 1869-70.

President.

*JOHN HILTON, Esq., F.R.S.

Vice-Presidents.

HENRY W. ACLAND, M.D., F.R.S. (Oxford).	W. D. HUSBAND. (York).
THOMAS E. BEATTY, M.D. (Dublin).	*W. D. MOORE, M.D. (Dublin).
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	*ERASMIUS WILSON, Esq., F.R.S.

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WARBURTON BEGGIE, M.D. (Edinburgh).	T. CARR JACKSON, Esq.
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THOMAS M. DALDY, M.D.	G. MAY, Esq. (Reading).
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*R. WILBRAHAM FALCONER, M.D. (Bath).	*WILLIAM TURNER, M.B., F.R.S.E. (Edinburgh).
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T. BELL FLETCHER, M.D. (Birmingham).	
E. C. FURNER, Esq. (Brighton).	

Treasurer.

W. SEDGWICK SAUNDERS, M.D., 13, Queen Street, Cheapside, E.C.

Auditors.

J. S. BRISTOWE, M.D. | *THOMAS BRYANT, Esq.
ANDREW CLARK, M.D.

Hon. Secretary.

JONATHAN HUTCHINSON, Esq., 4, Finsbury Circus, E.C.

Depot and Agency.

MR. H. K. LEWIS, 136, Gower Street, W.C.

* Those whose names are marked with an Asterisk were not in Office last year.

BALANCE SHEET FOR 1868.

RECEIPTS.	£	s.	d.	RECEIPTS.	£	s.	d.
Balance in hand, December, 1867 (see preceding Balance Sheet)	1377	10	5	Folio I. Artists, Editors, and Translators	1102	4	5
Subscriptions: 10 for 1859,	£10	10	0	Folio II. Printers	337	15	0
11 for 1860,	11	11	0	Folio III. Paper	639	16	5
82 for 1861,	86	2	0	Folio IV. Bookbinders	377	8	6
75 for 1862,	78	15	0	Folio V. Expenses of Management: Agents' Salary and Per-cent-age	£337	4	3
67 for 1863,	70	7	0	Agents' Expenses	52	10	0
58 for 1864,	60	18	0	Secretary's Expenses	4	8	10
78 for 1865,	81	18	0	Treasurer's Expenses	Expenses of Council Meetings	2	2
145 for 1866,	152	5	0	Insurance	Agent's Expenditure (chiefly Carriage)	2	13
479 for 1867,	502	19	0	Advertisements	93	13	2
1694½ for 1868,	1779	4	6		70	0	0
14 for 1869,	14	14	0		562	11	9
Vols. of Casper Fasen. of Atlas Year Book	4	12	6	Folio VI. Purchase of Copyright and of Stereotype Letterpress	284	0	0
Sale of Troussau in Sheets	28	9	0	Sum total of Expenses	3303	16	1
On account from U.S.	30	0	0	Balance in hand, December, 1868	991	5	4
Interest of Deposit,	7	5	10				
	£2951	12	10				
Less Deductions per Local Sec.: Debit £5 for error, May 2, See Treasurer's Book	34	1	10				
					2917	11	0
					£4295	1	5

LIST OF WORKS

ALREADY ISSUED.

ON SYPHILIS IN INFANTS.

By PAUL DIDAY. Translated by DR. WHITLEY.

"The work of M. Diday is of great merit; it contains all that has been written on infantile syphilis, and he puts the whole subject in a well-arranged form for further investigation as well as present use."—*British and Foreign Medico-Chirurgical Review*.

With Woodcuts.

ON THE MORE IMPORTANT DISEASES OF WOMEN AND CHILDREN.

With other Papers, by DR. GOOCH.

Reprinted; with a Prefatory Essay by DR. ROBERT FERGUSON.

"The work of Dr. Gooch is so well known and highly appreciated by every lover of medical literature, that we need say nothing in its praise. It has been before the world for thirty years, and only one opinion has been expressed upon its merits. We cannot but consider, therefore, that the Council of the New Sydenham Society has done well to republish it, more especially as the Council has had the good fortune to persuade Dr. Robert Ferguson to furnish an introductory essay on the author's life and writings."—*Lancet*.

MEMOIRS ON DIPHTHERIA:

Containing Memoirs by BRETONNEAU, TROUSSEAU, DAVIOT, GUERSANT,
BOUCHUT, EMPIS, etc.

Selected and Translated by DR. R. H. SEMPLE.

"Bretonneau's Memoir must be considered the fullest and most searching that has yet appeared in any country on this extraordinary disease."—*British Medical Journal*.

"Like honour is due to M. Bretonneau, for his admirable investigations. . . . His Treatise on Diphtheria constitutes the greater part of the volume recently published by the New Sydenham Society. Of the remaining Memoirs each contains much valuable material. . . . There is no part of the volume which will better repay study than the researches of M. Empis."—*Medico-Chirurgical Review*.

With Lithographs.

ON THE MINUTE STRUCTURE AND FUNCTIONS OF THE SPINAL CORD.

By Professor SCHREDER VAN DER KOLK.

With Lithographs.

ON THE MINUTE STRUCTURE AND FUNCTIONS OF THE MEDULLA OBLONGATA, AND ON THE PROXIMATE CAUSE AND RATIONAL TREATMENT OF EPILEPSY.

By Professor SCHROEDER VAN DER KOLK.

Translated by Dr. W. D. MOORE, of Dublin.

"This volume alone, illustrated as it is by such admirable engravings of the anatomy of the nervous system, is worth the whole annual subscription."—*British Medical Journal.*

EXPERIMENTAL RESEARCHES ON THE EFFECTS OF LOSS OF BLOOD IN INDUCING CONVULSIONS.

By Drs. KUSSMAUL and TENNER.

Translated by Dr. BRONNER, of Bradford.

With Numerous Woodcuts.

ON THE PROCESS OF REPAIR AFTER RESECTION AND EXTIRPATION OF BONES.

By Dr. A. WAGNER, of Berlin. Translated by Mr. T. HOLMES.

THREE MEMOIRS ON GLAUCOMA AND ON IRIDECTOMY AS A MEANS OF TREATMENT.

By Professor VON GRÆFE.

Translated by Mr. T. WINDSOR, of Manchester.

"This is the fifth volume of the first year, and contains translations of three important and well-known essays from the German."—*Lancet.*

"The value—the great practical value—of these Memoirs will be admitted by every one who peruses them."—*Medical Times and Gazette.*

Numerous Woodcuts.

MEMOIRS ON ABDOMINAL TUMOURS AND INTUMESCENCE.

By Dr. BRIGHT.

Reprinted from the "Guy's Hospital Reports," with a Preface by Dr. BARLOW.

With Coloured Lithographs, and Numerous Woodcuts.

A CLINICAL ACCOUNT OF DISEASES OF THE LIVER.

By Professor FRERICHS. Vol. I. Translated by Dr. MURCHISON.

"Frerichs' book is one of those treatises that will frequently be taken down from the book shelves to be consulted, both by physiologists and physicians."—*Lancet*.

"We shall look forward with interest to the completion of this very valuable addition to the Clinical History of Liver Diseases."—*Medical Times and Gazette*.

A YEARBOOK OF MEDICINE AND SURGERY, AND THEIR ALLIED SCIENCES, for 1859.

Edited by Dr. HARLEY, Dr. HANDFIELD JONES, Mr. HULKE,
Dr. GRAILY HEWITT, and Dr. ODLING.

"Our space will not admit of a further statement of the excellent character of the Yearbook, and the other works issued by the New Sydenham Society, but we would strongly urge every member of the profession, who has the advancement of medical knowledge at heart, to lose no time in forwarding his name, should he not already have done so."—*London Medical Journal*.

THE FIRST FASCICULUS OF AN ATLAS OF PORTRAITS OF SKIN DISEASES;

Comprising Three Plates, copied from those of Hebra, and illustrating:
—Plate I. FAVUS. Plate II. TINEA TONSURANS.
Plate III. LUPUS EXULCERANS.

A HANDBOOK OF THE PRACTICE OF FORENSIC MEDICINE, BASED UPON PERSONAL EXPERIENCE.

By J. L. CASPER, M.D., late Professor of Forensic Medicine in the
University of Berlin. Vol. I.

Translated by Dr. G. W. BALFOUR, of Edinburgh.

"This volume must be regarded as a valuable and judicious addition to the publications of the Society from which it emanates. The advantages to be derived by the reader from its perusal cannot be over-estimated or too eagerly sought for."—*Madras Quarterly Journal of Medical Science*.

ON THROMBOSIS OF THE CEREBRAL SINUSES.

By Professor VON DUSCH. Translated by Dr. WHITLEY.

Numerous Woodcuts.

CZERMAK ON THE PRACTICAL USES OF THE LARYNGOSCOPE.

Translated by Dr. G. D. GIBB.

"What has been given will, we trust, convince any one who may hitherto have doubted the value of laryngoscopy, that it is a real acquisition. To those who are desirous of becoming more fully acquainted with the subject we strongly recommend the study of the work [Professor Czermak's] from which we have chiefly culled our extracts."—*Medico-Chirurgical Review*, October, 1862.

*Four Lithographs.*SCHRÖDER VAN DER KOLK
ON A CASE OF ATROPHY OF THE LEFT HEMISPHERE
OF THE BRAIN.

Translated by Dr. W. MOORE, of Dublin.

RADICKE'S PAPERS ON THE APPLICATION OF
STATISTICS TO MEDICAL ENQUIRIES.

Translated by Dr. BOND.

"We can hardly conceive an object to which the New Sydenham Society could better devote a portion of its rapidly-increasing resources than to the introduction of papers such as these to the profession. It is by such work as this that the Society is calculated to confer inestimable benefits on the profession of this country."—*Medical Times and Gazette*, January 25, 1862.

*Woodcuts.*ESMARCH ON THE USES OF COLD IN SURGICAL
PRACTICE.

Translated by Dr. MONTGOMERY.

"Dr. Esmarch's treatise is of high practical interest."—*British Medical Journal*, December, 1863.

A YEARBOOK OF MEDICINE AND SURGERY, AND
THEIR ALLIED SCIENCES, for 1860.Edited by Dr. HARLEY, Dr. HANDFIELD JONES, Mr. HULKE,
Dr. GRAILY HEWITT, and Dr. SANDERSON.

"This is, as it professes to be, an improvement on its predecessor. On the whole the editors have done their laborious work well."—*British Medical Journal*, Dec. 31, 1861.

A SECOND
FASCICULUS OF THE ATLAS OF PORTRAITS OF
SKIN DISEASES,

Comprising Plates from Hebra, illustrating:—Plate IV. PSORIASIS DIFFUSA. Plate V. ICHTHYOSIS. Plate VI. LUPUS SERPIGINOSUS; ALOPECEA AREATA.

Woodcuts and Lithographs.

THE SECOND AND CONCLUDING VOLUME OF
FRERICHS' CLINICAL ACCOUNT OF DISEASES OF
THE LIVER.

Translated by Dr. MURCHISON.

“The first instalment of Frerichs' well-known work was so good that some little impatience was natural as regarded the remainder. Having received the second volume, we have to thank both author and translator for the very acceptable gift, this treatise being about one of the most important that the recent schools of Germany have produced. . . . The members of the New Sydenham Society could not receive any better return for their subscriptions.”—*Lancet.*

A YEARBOOK OF MEDICINE AND SURGERY, AND
THEIR ALLIED SCIENCES, for 1861.

Edited by Dr. HARLEY, Dr. HANDFIELD JONES, Mr. HULKE,
Dr. GRAILY HEWITT, and Dr. SANDERSON.

A THIRD
FASCICULUS OF THE ATLAS OF PORTRAITS OF
SKIN DISEASES,

Comprising Plates, illustrating:—Plate VII. LUPUS VULGARIS ET SERPIGINOSUS (Cicatrising). Plate VIII. HERPES ZOSTER FRONTALIS (affecting the Frontal and Trochlear Branches of the Fifth Nerve). Plate IX. MOLLUSCUM CONTAGIOSUM. a, on a Child's Face; b, on the Breast of the Child's Mother; c, Anatomical Characters of the Tumours; d, Microscopic Characters.

“They are better, to our mind, than any other plates in use amongst us; and there cannot be a question as to the Society's issue being as popular as it is useful.”—*Lancet.*

A HANDBOOK OF

THE PRACTICE OF FORENSIC MEDICINE, BASED
UPON PERSONAL EXPERIENCE.

By J. L. CASPER, M.D., Professor of Forensic Medicine in the University
of Berlin. Vol. II.

Translated by Dr. G. W. BALFOUR.

With Two Tables and Nine Woodcuts.

THE AURAL SURGERY OF THE PRESENT DAY.

By W. KRAMER, M.D., of Berlin.

Translated by HENRY POWER, Esq., F.R.C.S., M.B.

A YEARBOOK OF MEDICINE AND SURGERY, AND
THEIR ALLIED SCIENCES, for 1862.

Edited by Dr. MONTGOMERY, Dr. HANDFIELD JONES, Mr. WINDSOR,
Dr. GRAILY HEWITT, and Dr. SANDERSON.

With Four Lithographs, and numerous Woodcuts.

A GUIDE TO THE QUALITATIVE AND QUANTITATIVE
ANALYSIS OF THE URINE.

By Dr. C. NEUBAUER and Dr. J. VOGEL. Fourth Edition, considerably
enlarged. Translated by WILLIAM O. MARKHAM, F.R.C.P.L.

"The New Sydenham Society have conferred a benefit, not only on their own
subscribers, but on the whole profession in this country, by publishing the work of
Drs. Neubauer and Vogel."—*Medical Times and Gazette.*

"It is one of those works in which there is not an unnecessary line, nor even a
word. It is quite a text-book upon urinology for the scientific physician, and may
be handled likewise by the youngest student."—*Lancet.*

A HANDBOOK OF

THE PRACTICE OF FORENSIC MEDICINE, BASED
UPON PERSONAL EXPERIENCE.

By J. L. CASPER, M.D., late Professor of Medical Jurisprudence in the
University of Berlin.

Translated by G. W. BALFOUR, M.D. Vol. III.

[The next volume (Vol. IV.) will conclude Professor Casper's work.]

"Casper's great work, based as it is upon a minute and laborious observation of
facts, must prove the most trustworthy guide in the interpretation of the oftentimes
difficult questions which the medical jurist is called upon to solve."—*Lancet.*

ON THE ANOMALIES OF ACCOMMODATION AND
REFRACTION OF THE EYE,

WITH A

PRELIMINARY ESSAY ON PHYSIOLOGICAL DIOPTRICS.

By F. C. DONders, M.D., Professor of Physiology and Ophthalmology
in the University of Utrecht.

Translated from the Author's Manuscript, by W. D. MOORE, M.D.

"This splendid monograph, from the hand of the accomplished professor of physiology and ophthalmology of Utrecht, will be hailed as a boon by all lovers of ophthalmic science."—*Lancet*.

"This is one of the most important volumes published by the New Sydenham Society. Elaborated by a master mind, translated by a skilled and practised hand, this work, in which will be found the results of many years' experience, and of the examination of many thousand eyes, marks quite a new era in ophthalmic science. No lately published work has done so much to advance the progress of this branch of surgery as this one of Professor Donders, so ably translated for us by Dr. W. D. Moore."—*Dublin Quarterly*.

"Professor Donders has succeeded in almost clearing up a class of diseases previously in extreme confusion. This work well deserves the epithet 'exhaustive'; it is equally scientific and practical, full, yet not diffuse, clearly and pleasingly written, and freely illustrated by cases and woodcuts. This is undeniably one of the most able and valuable works published for many years. We must not neglect to add that the translator appears to have most ably and satisfactorily performed his very tedious and difficult task. Most heartily do we thank the author for the great benefit he has bestowed on the medical profession, and the New Sydenham Society for the impulse it has given by this important publication to British Ophthalmology."—*Medico-Chirurgical Review*.

A YEARBOOK OF MEDICINE, SURGERY, AND THEIR
ALLIED SCIENCES, for 1863.

THE FOURTH
FASCICULUS OF THE ATLAS OF PORTRAITS OF
SKIN DISEASES,

Comprising original Plates, illustrating:—

Plate X. MORBUS ADDISONII. Plate XI. LEUCODERMA.

A HANDBOOK OF
THE PRACTICE OF FORENSIC MEDICINE, BASED
UPON PERSONAL EXPERIENCE.

By J. L. CASPER, M.D., late Professor of Medical Jurisprudence in the
University of Berlin. Translated by G. W. BALFOUR, M.D.
Vol. IV.

A YEARBOOK OF MEDICINE AND SURGERY, AND
THEIR ALLIED SCIENCES, for 1864.

Edited by Mr. HINTON, Dr. HANDFIELD JONES, Mr. WINDSOR,
Dr. MEABURN BRIGHT, and Dr. HILTON FAGGE.

THE FIFTH
FASCICULUS OF THE ATLAS OF PORTRAITS OF
SKIN DISEASES,

Comprising original Plates, illustrating:—Plate XII. PEMPHIGUS.
 Plate XIII. PITYRIASIS VERSICOLOR.
 Plate XIV. PSORIASIS INVETERATA.

CLINICAL MEMOIRS ON DISEASES OF WOMEN.

By Drs. BERNUTZ and GOUPIL.
 Translated and abridged by Dr. MEADOWS. Vol. I.

“The careful study of these valuable Memoirs is imperative in all who are interested in gynæcology.”—*Lancet*, October, 1866.

THE SIXTH
FASCICULUS OF THE ATLAS OF PORTRAITS OF
DISEASES OF THE SKIN,

Comprising original Portraits, illustrating:—Plate XV. Eczema, Impetiginoides on Face of Adult. Plate XVI. Eczema on the Face, etc., of Infant; Eczema Rubrum on Leg of Adult. Plate XVII. Psoriasis of Hands and Finger-Nails; Syphilitic Psoriasis of Finger-Nails; Congenito-Syphilitic Psoriasis of Finger- and Toe-Nails; Onychia Maligna; Chronic General Onychitis.

ON DISEASES OF THE SKIN, INCLUDING THE
EXANTHEMATA.

By Professor HEBRA. Vol. I.
 Translated and Edited by Dr. HILTON FAGGE.

“Of all the works produced by the New Sydenham Society this is one of the most valuable and most welcome. . . . It is to be remarked that this book is not a mere translation of the German work; it is a new and revised edition, undertaken by the author for his English brethren.”—*Medical Times and Gazette*, April 27, 1867.

“The New Sydenham Society has done good service to the medical profession by undertaking the translation and publication of Professor Hebra’s excellent work. In several respects the English edition is greatly superior to the original. In closing its pages we have but one regret, namely, that the New Sydenham Society does not embody the whole medical confraternity, so that every member of our noble profession might have on his bookshelves a copy of this most valuable book.”—*Journal of Cutaneous Medicine*, April, 1867.

“The New Sydenham Society has given to the profession some most valuable works, but it has never done a better service than in giving the profession this translation of Hebra, the acknowledged leader at present of dermatologists. The chief value of the book is in his enormous clinical experience and close observation, in his anatomical and physiological knowledge, and in his power of clear and accurate description. The greatest credit is due to the translator, Dr. Fagge, who tells us in his Preface that every sheet of the translation has been read over and accepted by Professor Hebra.”—*Lancet*.

CLINICAL MEMOIRS ON DISEASES OF WOMEN.

By Drs. BERNUTZ and GOUPIL. Vol. II.

Translated and abridged by Dr. MEADOWS.

" Those members of our profession whose engagements are too numerous to permit of lengthened reading, will be pleased with Dr. Meadows' excellent rendering of the original. Nothing of practical importance has been omitted, and instead of losing by the translation, the wholesome, necessary shortening has added life and pith to the work. It is one of the most painstaking, careful, exhaustive and practical treatises that has ever yet appeared; and any general practitioner who is anxious to obtain a true knowledge of these diseases will consult without delay this neat volume."—*Medical Mirror*.

" We have to thank Dr. Meadows for the careful arrangement of excellent index to the subjects treated, and to the Bibliography, which add much to the value of the work. The text has been well translated, and though considerably abridged from the original, the material facts and arguments are throughout fairly brought forward; and we think the members of the New Sydenham Society will be well satisfied with these volumes."—*Medico-Chirurgical Review*.

A MANUAL OF
MENTAL PATHOLOGY AND THERAPEUTICS.

By Professor GRIESINGER.

Translated by Dr. LOCKHART ROBERTSON and Dr. JAMES RUTHERFORD.

A BIENNIAL RETROSPECT OF MEDICINE, SURGERY,
AND THEIR ALLIED SCIENCES, for the Years 1865
and 1866.Edited by Mr. POWER, Dr. ANSTIE, Mr. HOLMES, Dr. BARNES, Mr.
WINDSOR, and Dr. HILTON FAGGE.THE SEVENTH
FASCICULUS OF THE ATLAS OF SKIN DISEASES,
Comprising original Portraits, illustrating:—Plate XVIII. Moluscum
fibrosum seu simplex. Plate XIX. Psoriasis-Lupus (Lupus non
exedens, in numerous symmetrical patches). Plate XX. Porrigo
contagiosus (e pediculus).ON DISEASES OF THE SKIN, INCLUDING THE
EXANTHEMATA.

By Professor HEBRA. Vol. II.

Translated and edited by Dr. HILTON FAGGE and Dr. P. PYE SMITH.

" Had we space, we should have been glad to enter into a lengthened critique of the second volume of Hebra's work. We are relieved from any misgiving, however, by the fact that the work will be very largely circulated amongst our readers by the Sydenham Society, and that they, with others who aspire to any real knowledge of skin diseases, would not, under any circumstances, be satisfied without studying the work for themselves. . . . This second volume contains information relative to the most important diseases of the skin; and it will, we are confident, do good service in helping on the cause of cutaneous medicine in England."—*Lancet*, November 7, 1868.

A TREATISE ON SYPHILIS, HISTORICAL AND PRACTICAL.

By Dr. LANCEREAUX, of Paris. Vol. I. Translated by Dr. WHITLEY.

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Hon. Secretary.

October, 1868.

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